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TRANSACTIONS

OF THE

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OF

OBSTETRICIANS AND GYNECOLOGISTS.

BOSTON MEDICAL
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VOL. VII.

FOR THE YEAR 1894.

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NOTE.

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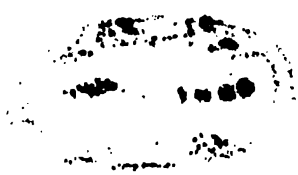
WILLIAM WARREN POTTER, *Secretary*,
284 FRANKLIN STREET, BUFFALO.



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CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

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OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, and Corresponding Fellows.

The Ordinary Fellows shall not exceed one hundred and twenty-five in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council, and elected by the Association.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual *Transactions*.

They shall pay an annual fee of five dollars.[1]

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and five Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting; *provided* that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding; and *provided further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

[1] According to an amendment passed September 20, 1894.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the *Transactions* under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members, may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A.M.
   - *a.* Reports of Committees on Scientific Questions.
   - *b.* Reading of Papers and Discussion of the same.
2. One Business meeting shall be held at half-past nine o'clock P.M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's Record shall be read; the Treasurer's Accounts submitted; the Reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline

to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow on admission shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay *in advance* the sum of twenty dollars annually thereafter.

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive annually a draft from the President drawn on the Treasurer for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years, unless he offer a satisfactory excuse, may be dropped from fellowship upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

AMENDMENTS.

XII. These By-laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1894–1895.

PRESIDENT.

J. HENRY CARSTENS, DETROIT.

VICE-PRESIDENTS.

WILLIAM ELIAS B. DAVIS, BIRMINGHAM.
HENRY HOWITT, GUELPH.

SECRETARY.

WILLIAM WARREN POTTER, BUFFALO.

TREASURER.

XAVIER OSWALD WERDER, PITTSBURG.

EXECUTIVE COUNCIL.

CHARLES ALFRED LEE REED, CINCINNATI.
JAMES FREDERICK WILLIAM ROSS, TORONTO.
JOSEPH PRICE, PHILADELPHIA.
ALBERT VANDER VEER, ALBANY.
LEWIS SAMUEL McMURTRY, LOUISVILLE.

HONORARY FELLOWS.

* Deceased.

1889.—Bantock, George Granville, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. 12 Granville Place, Portman Square, W., London, England.

1889.—Barbour, A. H. F., M.A., B.S.C., M.D., F.R.C.P.E., F.R.S.E. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 28 Melville Crescent, Edinburgh, Scotland.

1892.—Boislinière, L. Ch., A.B., M.D., LL.D. Emeritus Professor of Obstetrics in the St. Louis Medical College; Consulting Obstetrician to the St. Ann Lying-in Asylum and St. Louis Female Hospital; late President St. Louis Obstetrical and Gynecological Society, and late President St. Louis Medical Society; Member of St. Louis Academy of Science and of the Paris (France) Anthropological Society. 2303 Chestnut Street, St. Louis, Missouri.

1890.—Championnière, Just. Lucas-, M.D. 3 Avenue Montaigne, Paris, France.

1889.—Charpentier, Arthur Louis Alphonse, M.D. Fellow of the Faculty of Medicine of Paris; Member of the Academy of Medicine; and Chevalier of the Legion of Honor. 66 Rue de Miromesnil, Paris, France.

1888.—Cordes, August Elisée, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical Society of London and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecological Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at

1894.—Slaviansky, Kronid, M.D. Ordinary Professor of the Obstetrical and Gynecological Clinic at the Imperial Medical Academy; Director of the Lying-in Hospital of Gavan at St. Petersburg; Corresponding Fellow of the Boston Gynecological Society. 24 Liteinaia Street, St. Petersburg, Russia.

1890.—Savage, Thomas, M.D., F.R.C.S. Eng. Surgeon to the Birmingham Hospital for Women. 33 Newhall Street, Birmingham, England.

1889.—Schultze, Bernhard Sigmund, M.D. Professor of Gynecology; Director of the Lying-in Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1888.—Smith, J. Greig, M.A., C.M., M.B., F.R.S.E. Surgeon to the Bristol Royal Infirmary; Lecturer on Surgery, Bristol Medical School; late Examiner in Surgery, University of Aberdeen, Scotland. 16 Victoria Square, Clifton, Bristol, England.

1888.—Tait, Lawson, M.D., LL.D., F.R.C.S.E. Surgeon to the Birmingham and Midland Hospital for Women; Consulting Surgeon to the West Bromwich, the Southampton, and the Nottingham Hospitals for Women; Professor of Gynecology and Member of the Council in Queen's College; President of Mason's Science College; Ex-President of the British Gynecological Society; President of the Birmingham Medical Institute; Ex-President of the Birmingham and Midland Counties Branch of the British Medical Association; President of the Worcestershire and Herefordshire Branch of the British Medical Association and of the Midland Medical Society. 7 The Crescent, Birmingham, England.

1888.—Williams, John, Bart., M.D., F.R.C.P. 63 Brook Street, Grosvenor Square W., London, England.

1889.—v. Winckel, F., M.D. Professor of Gynecology and Director of the Royal Hospital for Women; Member of the Supreme Council and of the Faculty of Medicine in the University of Munich. 16A Sonnenstrasse, Munich, Germany.

Total, twenty-nine Honorary Fellows.

CORRESPONDING FELLOWS.

1891.—GRIFFIN, HERBERT SPOHN, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto, 157 Main Street, Hamilton, Ontario, Canada.

1891.—MACHELL, HENRY THOMAS, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Woman's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

Total, two Corresponding Fellows.

ORDINARY FELLOWS.

* Deceased.

1893.—ARMSTRONG, OSCAR SAMUEL, M.D. Professor of Gynecology in the Michigan College of Medicine and Surgery, Detroit; Gynecologist to Emergency Hospital; President of Wayne County Medical Society, 1893; Member of the American Medical Association; Member of the Michigan State Medical Society; Member of the Michigan Surgical and Pathological Society; Associate Editor of the *Emergency Hospital Reports*. 399 Third Avenue, Detroit, Mich.

1890.—ASDALE, WILLIAM JAMES, M.D. Professor of Diseases of Women, Western Pennsylvania Medical College; Medical Department University of Western Pennsylvania. 2107 Penn Avenue, Pittsburg, Pa.

1892.—ASHTON, WILLIAM EASTERLY, M.D. Professor of Gynecology in the Medico-Chirurgical College; Gynecologist to the Medico-Chirurgical Hospital and to the Philadelphia Hospital. 2011 Walnut Street, Philadelphia, Pa.

Founder.—BAKER, WASHINGTON HOPKINS, M.D. Senior Obstetrician to the Maternity Hospital; Physician to the German Hospital. 1610 Summer Street, Philadelphia, Pa.

Founder.—BANTA, ROLLIN LEDRUE, M.D. Professor of Materia Medica and Therapeutics in Niagara University Medical College; Consulting Obstetrician to the Sisters of Charity and Woman's Hospitals; President of the Buffalo Obstetrical Society, 1887–'88. *Vice-President*, 1890. *Executive Council*, 1891. 358 South Division Street, Buffalo, N. Y.

1889.—BARROW, DAVID, M.D. Member of the Southern Surgical and Gynecological Association. 196 East High Street, Lexington, Kentucky.

1890.—BERNARDY, EUGENE PROSPER, M.D. 221 South Seventeenth Street, Philadelphia, Pa.

1892.—BLUME, FREDERICK, M.D. Obstetrician to the Roselia

Maternity Hospital; Consulting Gynecologist to the Mercy Hospital; Physician to the Pittsburg Free Dispensary; President of the Pittsburg Obstetrical Society, 1892. 118 Liberty Street, Allegheny, Pa.

1890.—BOND, YOUNG HANCE, M.D. Professor of Gynecology, Marion-Sims College of Medicine; Consulting Gynecologist to the St. Louis City and to the St. Louis Female Hospitals. 914 North Grand Avenue, St. Louis, Mo.

1893.—BOISE, EUGENE, A.B., M.D. Gynecologist to St. Mark's Hospital. 23 North Lafayette Street, Grand Rapids, Mich.

Founder.—BOYD, JAMES PETER, A.M., M.D. Professor of Obstetrics, Gynecology, and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obstetric Surgeon to St. Peter's Hospital; Fellow of the British Gynecological Society. 152 Washington Avenue, Albany, N. Y.

1889.—BRANHAM, JOSEPH H., M.D. Demonstrator of Anatomy in the College of Physicians and Surgeons; Visiting Surgeon to Bayview Hospital. 538 North Arlington Avenue, Baltimore, Md.

1894.—BROWN, JOHN YOUNG, JR., M.D. First Assistant Physician in the Central Kentucky Asylum for the Insane. Lakeland, Ky.

1889.—*BURNS, BERNARD, M.D. Allegheny, Pa. 1892.

1891.—CAMERON, IRVING HEWARD, M.B. Professor of Clinical Surgery in the University of Toronto; Surgeon to the Toronto General Hospital, to the Hospital for Sick Children, and to St. John's Hospital for Diseases of Women. 307 Sherborne Street, Toronto, Ont., Canada.

Founder.—CARSTENS, J. HENRY, M.D. Professor of Obstetrics and Clinical Gynecology in the Detroit College of Medicine; Gynecologist to Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-President*, 1888–'89; *President*, 1895. 620 Woodward Avenue, Detroit, Mich.

Founder.—CLARKE, AUGUSTUS PECK, A.M., M.D. Dean and Professor of Gynecology and Abdominal Surgery in the College of Physicians and Surgeons, Boston; President of the Gynecological Society of Boston, 1891–'92; Vice-President of the Pan-American Medical Congress, 1893; Member of the Massachusetts Medical Society; Fellow of the American Academy of Medicine; Member of the

American Public Health Association; Member of the American Medical Association; Consulting Physician to the Middlesex Hospital and Dispensary. 825 Massachusetts Avenue, Cambridge, Mass.

1890.—*Coles, Walter, M.D. St. Louis, Mo. 1892.

1889.—Conklin, William Judkins, A.M., M.D. Visiting Surgeon to St. Elizabeth's Hospital; President of the Medical Society of the State of Ohio, 1891. 17 East First Street, Dayton, Ohio.

1892.—Cordier, Albert Hawes, M.D. Lecturer on Abdominal Surgery in the Kansas City Medical College; First Vice-President of the Kansas State Medical Society, 1892; Corresponding Member of the Philadelphia Obstetrical Society. 1024 Walnut Street, Kansas City, Mo.

1894.—Crofford, Thomas Jefferson, M.D. Professor of Physiology and Clinical Lecturer on Diseases of Women in the Memphis Hospital Medical College; Member of the Southern Surgical and Gynecological Association. 155 Third Street, Memphis, Tenn.

Founder.—Cushing, Clinton, M.D. Professor of Gynecology in Cooper Medical College; Consulting Surgeon to the French Hospital. *Executive Council,* 1888–'91. 636 Sutter Street, San Francisco, Cal.

1892.—Cushing, Ernest Watson, A.B., M.D. Surgeon of the Woman's Charity Club Hospital; Editor of the *Annals of Gynecology and Pediatry.* 168 Newbury Street, Boston, Mass.

1894.—Davega, S. M., M.D. Surgeon to the Richmond and Danville Railroad, C. and L. R. R., C. and C. R. R., G. C. and N. R. R. Wylie Street, Chester, S. C.

1889.—Davis, William Elias B., M.D. Secretary of the Southern Surgical and Gynecological Association, 1888–'95; formerly Surgeon to the Birmingham Hospital of United Charities; President of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1892; Secretary of the Surgical Section of the American Medical Association, 1891; Honorary President of the Section on Gynecology and Abdominal Surgery of the First Pan-American Medical Congress; Honorary Member of the Medical Society of the State of New York. *Vice-President,* 1895. 1806 Third Avenue, Birmingham, Ala.

1892.—Dewees, William Busby, A.M., M.D. President 1891–'92 of the Golden Belt Medical Society of Kansas; Vice-President of the Pan-American Medical Congress of 1893 for Kansas; Fellow of the American Academy of Medicine; Member of the American Public

Health Association; Member of the American Medical Association; Member of the Western Association of Obstetricians and Gynecologists; Member of the Kansas State Medical Society; Life Member of the International Periodical Congress of Gynecology and Obstetrics. N. W. corner Santa Fé and Prescott Avenues, Salina, Kansas.

1892.—DORSETT, WALTER BLACKBURN, M.D. Professor of Obstetrics in the Beaumont Hospital Medical College; President of the St. Louis Medical Society, 1892. 3323 Lucas Avenue, St. Louis, Mo.

1889.—DOUGLAS, RICHARD, M.D. Professor of Diseases of Women and Clinical Gynecology in the Medical Departments of the University of Nashville and Vanderbilt University; President of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1893; Fellow of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association. 110 Spruce Street, Nashville, Tenn.

1892.—DUFF, JOHN MILTON, A.M., M.D., Ph.D. Chairman of the Section of Obstetrics and Diseases of Women in the American Medical Association, 1893; Professor of Obstetrics in the Western Pennsylvania Medical College; Surgeon and Gynecologist to the Pittsburg South Side Hospital; Fellow of the American Academy of Medicine; President of the Pittsburg Obstetrical Society, 1891. 2006 Carson Street, Pittsburg, Pa.

1894.—DUNLAP, FAYETTE, A.B., M.D. Danville, Ky.

1892.—DUNNING, LEHMAN HERBERT, M.D. Professor of Diseases of Women in the Medical College of Indiana; Consulting Gynecologist to the Indianapolis City Hospital and Dispensary. 249 North Alabama Street, Indianapolis, Ind.

1890.—FREDERICK, CARLTON CASSIUS, B.S., M.D. Adjunct Professor of Obstetrics in the Medical Department of Niagara University; Obstetrician and Gynecologist to the Buffalo Woman's Hospital; Obstetrician to the Widows' and Infants' Asylum; Gynecologist to the Erie County Hospital. 64 Richmond Avenue, Buffalo, N. Y.

1891.—GIBBONS, HENRY, JR., A.M., M.D. Dean and Professor of Obstetrics and Diseases of Women and Children in Cooper Medical College; Consulting Physician to the French and the Children's Hospitals. 920 Polk Street, San Francisco, Cal.

Founder.—GLASGOW, FRANK ADAMS, A.B., M.D. Professor of

Clinical Gynecology in the St. Louis Medical College; Physician and Pathologist to the Martha Parsons Free Hospital for Children; in charge of the Female Medical and Gynecological Departments of the St. Louis Mullanphy Hospital. The Ericsson, 2608 Locust Street, St. Louis, Mo.

1894.—GRIFFITH, JEFFERSON DAVIS, M.D. Professor of Surgery in the Kansas City Medical College; Surgeon to St. Joseph's Hospital and to the Children's Hospital. Corner Eleventh and Washington Streets, Kansas City, Mo.

1892.—HAGGARD, WILLIAM DAVID, M.D. Professor of Gynecology and Diseases of Children in the Medical Department of the University of Tennessee; Consulting Gynecologist to City Hospital; Gynecologist to St. Margaret's Hospital; Chairman of Section on Diseases of Children, American Medical Association, 1886; Fellow (President, 1888) of the Southern Surgical and Gynecological Association; President of the Nashville Academy of Medicine and Surgery. 312 North High Street, Nashville, Tenn.

1889.—HALL, RUFUS BARTLETT, M.D. Didactic and Clinical Lecturer on Gynecology in the Miami Medical College; Surgeon in charge of the Abdominal Department of the Presbyterian Hospital; Member of the Southern Surgical and Gynecological Association. *Vice-President*, 1891. Berkshire Building, 250 Elm Street, Cincinnati, Ohio.

1894.—HAYD, HERMAN EMILIE, M.D., M.R.C.S. Eng. Gynecologist to the Erie County Hospital. 78 Niagara Street, Buffalo, N. Y.

1891.—HAYNES, JOHN RUDOLPH, M.D., Ph.D. Associate Professor of Gynecology in the Medical College of the University of Southern California. 929 South Main Street, Los Angeles, Cal.

Founder.—*HILL, HAMPTON EUGENE, M.D. 1894.

1889.—HOFFMAN, JOSEPH, B.A., M.D. 126 West Diamond Street, Philadelphia, Pa.

1891.—HOLMES, JOSUS BILLINGTON SANDERS, M.D. Professor of Obstetrics in the Southern Medical College; President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member of the American Medical Association. 17 West Cain Street, Atlanta, Georgia.

1894.—HOWELL, STEPHEN YATES, A.M., M.D., M.R.C.S. Eng. Clinical Instructor in Diseases of Women in the Medical Department of the University of Buffalo; Gynecologist to the Erie County Hospital. 164 Franklin Street, Buffalo, N. Y.

1891.—HOWITT, HENRY, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospitals, Guelph; Member of the British and Ontario Medical Associations; Medical Health Officer for the City of Guelph. *Vice-President*, 1895. 235 Woolwich Street, Guelph, Ont., Canada.

1890.—HUGHES, DONNEL, M.D. *Executive Council*, 1893. 4005 Chestnut Street, Philadelphia, Pa.

1892.—HULBERT, GEORGE FREDERICK, M.D. Professor of the Principles and Practice of Medicine and Clinical Gynecology in the Marion-Sims Medical College; Consulting Physician and Surgeon to the Missouri Pacific Railway Hospital; Consulting Gynecologist to the St. Louis City and Female Hospitals; Secretary of the St. Louis Obstetrical and Gynecological Society. *Vice-President*, 1894. 4270 Delmar Avenue, St. Louis, Mo.

1892.—HYPES, BENJAMIN MURRAY, A.M., M.D. Professor of Obstetrics in the Marion-Sims Medical College. 2005 Victor Street, St. Louis, Mo.

Founder.—ILL, EDWARD JOSEPH, M.D. Surgeon to the Women's Hospital; Gynecologist to St. Barnabas' and Consulting Gynecologist to the German Hospitals. *Vice-President*, 1893. 1002 Broad Street, Newark, N. J.

1894.—JAYNE, WALTER ADDISON, M.D. Lecturer on Gynecology in the Medical Department of the University of Colorado; Consultant in Gynecology, St. Luke's Hospital; Gynecologist to the Arapahoe County Hospital, Denver. 217 McPhee Building, Denver, Col.

Founder.—JARVIS, GEORGE CYPRIAN, M.D. Visiting Surgeon to the Hartford Hospital. 98 High Street, Hartford, Conn.

1892.—JELKS, JAMES THOMAS, M.D. President of the Arkansas Medical Society, 1892; Chairman of the Section of Surgery in the American Medical Association, 1893; Professor of Gynecology in Barnes Medical College, St. Louis, Mo.; Member of the Southern Surgical and Gynecological Association. 178 Central Avenue, Hot Springs, Ark.

1894.—JENNINGS, CHARLES GODWIN, M.D. Professor of the Theory and Practice of Medicine and Clinical Diseases of Children in the Detroit College of Medicine; Physician to St. Mary's Hospital, Department of Diseases of Children; Physician to St. Vincent's Orphan

Asylum; Consulting Physician to the Woman's Hospital and Foundlings' Home; Consulting Physician to St. Luke's Hospital; Member of the American Pediatric Society. 457 Jefferson Avenue, Detroit, Mich.

1891.—JOHNSTON, GEORGE BEN, M.D. Professor of Surgery in the Medical College of Virginia; Physician to St. Sophia's Home for the Aged; Physician to St. Joseph's Female Orphan Asylum; Consulting Surgeon to the Richmond Eye, Ear, and Throat Infirmary; Vice-President of the Southern Surgical and Gynecological Association, 1892; Ex-President of the Richmond Medical and Surgical Society. 407 East Grace Street, Richmond, Va.

1890.—KRUG, FLORIAN, M.D. Gynecologist to the German Hospital; Fellow of the American Gynecological Society; Fellow of the Academy of Medicine; Member of the Obstetrical Society; Member of the Medical Society of the County of New York; Member of the German Medical Society. 13 East Forty-first Street, New York, N. Y.

1893.—LAIDLEY, LEONIDAS HAMLIN, M.D. Professor of Gynecology in the Beaumont Hospital Medical College; Surgeon-in-Chief to the Protestant Hospital. 3538 Washington Avenue, St. Louis, Mo.

1894.—LARRABEE, JOHN ALBERT, M.D. Professor of Obstetrics and Diseases of Children in and President of the Faculty of the Hospital College of Medicine. 1823 Baxter Avenue, Louisville, Ky.

1894.—LONG, JOHN WESLEY, M.D. Professor of Gynecology and Pediatrics in the Medical College of Virginia; Consulting Surgeon to the Gynecological and Pediatric Department of the City Dispensary; Member of the Southern Surgical and Gynecological Association. 12 North Second Street, Richmond, Va.

1890.—LONGYEAR, HOWARD WILLIAMS, M.D. Gynecologist to Harper Hospital; Physician to the Women's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-President*, 1893. 698 Woodland Avenue, Detroit, Michigan.

Founder.—LOTHROP, THOMAS, M.D. Professor of Obstetrics, Niagara University; Director of the Woman's Hospital; Physician to St. Francis' Hospital; Consulting Physician to the Hospital of the Sisters of Charity and to the Providence Retreat for the Insane. 153 Delaware Avenue, Buffalo, N. Y.

1894.—LOVE, WILLIAM SAMUEL, M.D. Winchester, Va.

1891.—MACDONALD, WILLIS GOSS, M.D. Lecturer on Operative Surgery and Instructor in Abdominal Surgery in Albany Medical College; Surgeon to the Out-door Department of the Albany Hospital. 27 Eagle Street, Albany, N. Y.

Founder.—MCARDLE, THOMAS EUGENE, A.M., M.D. Professor of Minor Surgery in the National Medical College; Assistant Surgeon in the Children's Hospital. 821 Sixteenth Street, Washington, D. C.

1891.—*MCCANN, JAMES, M.D. Pittsburg, Pa. 1893.

1893.—MCCOLL, HUGH, M.D. Graduate Toronto Normal, 1864; Bellevue Hospital Medical College, N. Y., 1871; Member of the American Medical Association; Member of the American Health Association; Member of the American Academy of Political and Social Science; Member of the Michigan State Medical Society; Member of the Detroit Gynecological Society; Member of the Michigan N. E. District Medical Association. Nepessing Street, Lapeer, Mich.

1894.—MCGUIRE, EDWARD, M.D. Professor of Gynecology in the University College of Medicine; Gynecologist to the Virginia Hospital; Member of the Southern Surgical and Gynecological Association. 216 East Franklin Street, Richmond, Va.

Founder.—MCMURTRY, LEWIS SAMUEL, A.M., M.D. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association. *Executive Council,* 1891–'92, 1895. *President,* 1893. 231 West Chestnut Street, Louisville, Ky.

Founder.—MANTON, WALTER PORTER, M.D. President of the Detroit Academy of Medicine, 1894; Vice-President of the Medical Board of the Woman's Hospital and Foundlings' Home; Consulting Gynecologist to the Eastern and Northern Michigan State Asylum for the Insane and St. Joseph's Retreat; Gynecic Surgeon to the House of the Good Shepherd; Lecturer on Obstetrics in the Detroit Medical College; Fellow of the British Gynecological Society; Fellow of the Royal Microscopical Society. *Vice-President,* 1894. 32 Adams Avenue, Detroit, Michigan.

Founder.—MAXWELL, THOMAS JEFFERSON, M.D. Professor of

Obstetrics and Gynecology, College of Physicians and Surgeons; Surgeon to St. Joseph's Hospital. 727 North Ninth Street, Keokuk, Iowa.

1893—MICHAEL, JACOB EDWIN, A.M., M.D. Professor of Obstetrics in the University of Maryland; Surgeon to the University Hospital; Member of the Southern Surgical and Gynecological Association. 201 West Franklin Street, Baltimore, Maryland.

Founder.—MILLER, AARON BENJAMIN, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of the Good Shepherd and Dispensary. 326 Montgomery Street, Syracuse, N. Y.

1894.—MEYER, JOSEPH, M.D. Member of the Philadelphia Obstetrical Society. Honey Grove, Texas.

1890.—MORRIS, ROBERT TUTTLE, A.M., M.D. Instructor in Surgery at the New York Post-Graduate Medical School and Hospital. *Vice-President*, 1892. 49 West Thirty-ninth Street, New York, N. Y.

Founder.—*MOSES, GRATZ ASHE, M.D. (See Honorary Fellows.)

1894.—MURPHY, JOHN BENJAMIN, A.M., M.D. Professor of Surgery in the College of Physicians and Surgeons and in the Post-Graduate Medical College; Attending Surgeon to the Cook County Hospital and to Alexander Hospital. Residence, 44 Throop Street; Office, Venetian Building, Chicago, Ill.

Founder.—MYERS, WILLIAM HERSCHEL, M.D. Surgeon to St. Joseph's Hospital; Member of the American and the British Medical Associations; Member of the Pathological Society of London; Member of the International Congress of Gynecologists and Obstetricians; Member of the Chicago Medical Society. *Vice-President*, 1890. 157 West Wayne Street, Fort Wayne, Indiana.

1891.—NEVITT, R. BARRINGTON, B.A., M.D. Lecturer on Clinical Surgery and Dean of the Women's Medical College; Surgeon to Toronto General Hospital; Surgeon to the Hospital for Sick Children; Surgeon to St. Michael's Hospital. 176 Jarvis Street, Toronto, Ont., Canada.

1889.—PAINE, JOHN FANNIN YOUNG, M.D. Professor of Obstetrics and Gynecology in the School of Medicine, University of Texas; Obstetrician and Gynecologist to the John Sealy Hospital; President

of the Texas State Medical Association, 1888; Vice-President of the Section of Public and International Hygiene in the Ninth International Medical Congress; Member of the American Medical Association and of the Southern Surgical and Gynecological Association. S. E. corner Broadway and Twenty-sixth Street, Galveston, Texas.

1890.—PEARSON, WILLIAM LIBBEY, M.D. 713 Union Street, Schenectady, N. Y.

1891.—PECK, GEORGE SHERMAN, M.D. Consulting Surgeon to the City Hospital. 26 West Federal Street, Youngstown, O.

1893.—PETERSON, REUBEN, A.B., M.D. Gynecologist to St. Mark's Hospital. 26 South Union Street, Grand Rapids, Mich.

1891.—POND, EDMUND MORSE, M.D. 20 South Main Street, Rutland, Vermont.

1891.—PORTER, WILLIAM, JR., M.D. Attending Physician to the Hartford Orphan Asylum; Member of the Hartford Medical Society, of the Hartford County Medical Society, and of the Connecticut State Medical Society. 47 Forest Street, Hartford, Conn.

Founder.—POTTER, WILLIAM WARREN, M.D. Consulting Gynecologist to the Woman's Hospital; Examiner in Obstetrics, New York State Medical Examining and Licensing Board; Chairman of the Section of Obstetrics and Diseases of Women, American Medical Association, 1890; President of the Buffalo Obstetrical Society, 1884–'86; Member of the Southern Surgical and Gynecological Association; President of the Medical Society of the State of New York, 1891; Executive President of the Section of Gynecology and Abdominal Surgery, Pan-American Medical Congress, 1893. *Secretary*, 1888–'95. 284 Franklin Street, Buffalo, N. Y.

1891.—PRAEGER, E. ARNOLD, M.D. Fellow of the Obstetrical Society of London, England; Member of the British and Canadian Medical Associations; Member of the Southern California and Los Angeles County Medical Societies; late Principal Surgeon to the New Vancouver Coal Mining and Land Co., etc. 57–59 Potomac Block, Broadway, Los Angeles, Cal.

Founder.—PRICE, JOSEPH, M.D. Physician-in-charge of the Obstetrical and Gynecological Department of the Philadelphia Dispensary; Member of the Southern Surgical and Gynecological Association; Honorary Fellow of the Medical Society of the State of New York; Honorary Fellow of the South Carolina Medical Society; Honorary

Fellow of the Virginia Medical Society; Member of the British Gynecological Association and of the Edinburgh Obstetrical Society. *Executive Council*, 1894–'95. 241 North Eighteenth Street, Philadelphia, Pa.

Founder.—REED, CHARLES ALFRED LEE, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Association. *Executive Council*, 1890–'95.. 487 W. Sixth Street, Cincinnati, Ohio.

1890.—RICKETTS, EDWIN, M.D. Professor of Abdominal Surgery and Gynecology in the Cincinnati Polyclinic; Member of the American and British Medical Associations; Member of the Southern Surgical and Gynecological Association. 137 Broadway, Cincinnati, Ohio.

1890.—ROBINSON, WILLIAM LOVAILLE, M.D. Ex-President of the Danville Medical Society; Member of the Virginia State Medical Examining Board; Member of the Southern Surgical and Gynecological Association. 733 Main Street, Danville, Va.

1889.—ROHÉ, GEORGE HENRY, M.D. Professor of Materia Medica, Hygiene, and Mental Diseases in the College of Physicians and Surgeons; Superintendent of the Maryland Hospital for the Insane; Member of the Southern Surgical and Gynecological Association. *Vice-President*, 1891. *Executive Council*, 1892–'93. *President*, 1894. Baltimore, Md.

1892.—ROSENWASSER, MARCUS, M.D. Dean and Professor of Diseases of Women and Abdominal Surgery in the University of Wooster; Gynecologist to the Cleveland Hospital for Women and Children; Consulting Gynecologist to the City Hospital; Member of the American Medical and Ohio State Medical Associations. 722 Woodland Avenue, Cleveland, Ohio.

1890.—ROSS, JAMES FREDERICK WILLIAM, M.D., L.R.C.P. (Eng.). Gynecologist to the Toronto General Hospital; Surgeon to the Woman's Hospital; Lecturer in Gynecology at the Woman's Medical College. *Executive Council*, 1892–'95. 481 Sherbourne Street, Toronto, Ont., Canada.

1890.—SEXTON, JOHN CHASE, A.M., M.D. *Executive Council*, 1894. Rushville, Indiana.

1889.—SEYMOUR, WILLIAM WOTKYNS, A.B., M.D. Professor of Gynecology in the University of Vermont; formerly House Surgeon of the Boston City Hospital; Member of the American Medical Association; Fellow of the New York State Medical Association; Member of the British Medical Association. *Executive Council*, 1892–'93. 105 Third Street, Troy, N. Y.

Founder.—SHEPHERD, GEORGE RUBENS, M.D. 667 Asylum Avenue, Hartford, Conn.

1891.—SMITH, CHARLES NORTH, M.D. Professor of Obstetrics and Clinical Gynecology in the Toledo Medical College; Gynecologist to St. Vincent's Hospital. 1921 Franklin Avenue, Toledo, Ohio.

Founder.—STANTON, BYRON, M.D. Professor of Diseases of Women and Children in the Miami Medical College; Consulting Obstetrician to Christ's Hospital. *Executive Council*, 1888–'89. 157 Dayton Street, Cincinnati, Ohio.

1890.—STONE, ISAAC SCOTT, M.D. Professor of Clinical Gynecology in the University of Georgetown; Gynecologist to the Columbia Hospital for Women; Fellow of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association; Member of the Medical Society of the District of Columbia. 1409 Rhode Island Avenue, N. W., Washington, D. C.

Founder.—STORRS, MELANCTHON, A.M., M.D. Attending Surgeon to the Hartford Hospital; President Connecticut State Medical Society. *Executive Council*, 1888–'89. 91 Ann Street, Hartford, Conn.

1894.—STOVER, CHARLES, M.D. President of the Amsterdam City Medical Society. 31 Division Street, Amsterdam, N. Y.

1894.—TAPPEY, ERNEST TAYLOR, A.M., M.D. Clinical Professor of Surgery in the Detroit College of Medicine; Surgeon to Harper Hospital. 141 Fort Street, Detroit, Mich.

1894.—TAYLOR, HUGH MCGUIRE, M.D. Professor of the Practice of Surgery in the University College of Medicine, Richmond, Va.; Member of the Surgical Staff of the Virginia Hospital, Richmond, Va.; Ex-President of the Medical Examining Board of Virginia; Ex-President of the Richmond Medical and Surgical Society; Member of the American Medical Association; Member of the Southern Surgical and Gynecological Association; Member of the National Association of Railway Surgeons. 6 North Fifth Street, Richmond, Va.

Founder.—TAYLOR, WILLIAM HENRY, M.D., Ph.D. Dean and Professor of Obstetrics, Miami Medical College; Obstetrician to the

Cincinnati Hospital; Consulting Obstetrician to Christ's Hospital. *President*, 1888–'89. 329 West Seventh Street, Cincinnati, Ohio.

1890.—THOMAS, GEORGE GILLETT, M.D. Ex-President Medical Society of the State of North Carolina. Wilmington, N. C.

Founder.—TOWNSEND, FRANKLIN, A.M., M.D. Emeritus Professor of Physiology, Albany Medical College; Obstetrician to the Albany City Hospital; Visiting Obstetrician and Gynecologist to St. Peter's Hospital; Visiting Physician to the Albany Protestant Orphan Asylum. 2 Park Place, Albany, N. Y.

Founder.—VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery in the Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association; Fellow of the British Gynecologcial Society; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Boston Gynecological Society. *Executive Council*, 1889–'91, 1895. *President*, 1892. 28 Eagle Street, Albany, N. Y.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association. 427 Upper Third Street, Evansville, Indiana.

1890.—WARD, MILO BUEL, A.M., M.D. Professor of Gynecology in the Kansas Medical College; Secretary of the Section on Obstetrics and Diseases of Women in the American Medical Association, 1893; President of the Western Association of Obstetricians and Gynecologists, 1892. 323 Potwin Place, Topeka, Kansas.

1889.—WENNING, WILLIAM HENRY, A.M., M.D. Professor of Obstetrics in the Woman's Medical College; Gynecologist to St. Mary's Hospital. 126 Laurel Street, Cincinnati, Ohio.

Founder.—WERDER, XAVIER OSWALD, M.D. Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis' Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer*, 1888–'95. 524 Penn Avenue, Pittsburg, Pa.

1893.—WINN, JOHN FARMER, M.D. Adjunct Professor of Obstetrics in the College of Physicians and Surgeons, Richmond, Virginia;

Corresponding Secretary of the Medical Society of Virginia; Member of the Richmond Academy of Medicine and Surgery; Editor and Proprietor of *Richmond Journal of Practice.* 800 East Marshall Street, Richmond, Virginia.

Founder.—WRIGHT, ADAM HENRY, B.A., M.D. Univ. Toronto, M.R.C.S. Eng. Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital. *President,* 1891. 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, one hundred and six Ordinary Fellows.

MINUTES OF THE PROCEEDINGS

AT THE

SEVENTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD IN THE

COLLEGE OF PHYSICIANS AND SURGEONS,

Toronto, Canada,

SEPTEMBER 19, 20, AND 21, 1894.

SEVENTH ANNUAL MEETING.

TORONTO, ONTARIO, WEDNESDAY, THURSDAY, AND FRIDAY, SEPTEMBER, 19, 20, AND 21, 1894.

The following-named Fellows were present:

BANTA, ROLLIN L.	BUFFALO.
BLUME, FREDERICK	ALLEGHENY.
BOISE, EUGENE	GRAND RAPIDS.
CARSTENS, J. HENRY	DETROIT.
CORDIER, A. H.	KANSAS CITY.
CUSHING, E. W.	BOSTON.
DAVIS, W. E. B.	BIRMINGHAM.
DEWEES, WILLIAM B.	SALINA.
DORSETT, WALTER B.	ST. LOUIS.
DUFF, JOHN M.	PITTSBURG.
DUNNING, L. H.	INDIANAPOLIS.
FREDERICK, CARLTON C.	BUFFALO.
GLASGOW, FRANK A.	ST. LOUIS.
GRIFFITH, JEFFERSON D.	KANSAS CITY.
HAYD, HERMAN E.	BUFFALO.
HOFFMAN, JOSEPH	PHILADELPHIA.
HOWITT, HENRY	GUELPH.
HOWELL, STEPHEN Y.	BUFFALO.
HULBERT, GEORGE F.	ST. LOUIS.
LONGYEAR, HOWARD W.	DETROIT.
LOTHROP, THOMAS	BUFFALO.
MACDONALD, WILLIS G.	ALBANY.
MACLEAN, DONALD	DETROIT.
MACHELL, HENRY T.	TORONTO.
McCOLL, HUGH	LAPEER.
McMURTRY, LEWIS S.	LOUISVILLE.
MURPHY, JOHN B.	CHICAGO.
MILLER, AARON B.	SYRACUSE.
MORRIS, ROBERT T.	NEW YORK CITY.
NEVITT, R. BARRINGTON	TORONTO.
PECK, GEORGE S.	YOUNGSTOWN.
POTTER, WILLIAM W.	BUFFALO.

PRICE, JOSEPH	PHILADELPHIA.
REED, CHARLES A. L.	CINCINNATI.
ROHÉ, GEORGE H.	BALTIMORE.
ROSENWASSER, MARCUS	CLEVELAND.
ROSS, JAMES F. W.	TORONTO.
SEXTON, JOHN C.	RUSHVILLE.
STANTON, BYRON	CINCINNATI.
STONE, I. S.	WASHINGTON.
STOVER, CHARLES	AMSTERDAM.
TAPPEY, ERNEST T.	DETROIT.
VANDER VEER, A.	ALBANY.
WERDER, XAVIER O.	PITTSBURG.
WRIGHT, ADAM H.	TORONTO.

Total, forty-five Fellows.

Letters or messages of regret were received from the following-named Fellows:

Honorary—Max Sänger, Lawson Tait, F. Winckel.

Ordinary—William E. Ashton, Y. H. Bond, James P. Boyd, William J. Conklin, Clinton Cushing, William D. Haggard, J. B. S. Holmes, B. M. Hypes, Edward J. Ill, James T. Jelks, Thomas E. McArdle, Walter P. Manton, William H. Myers, Reuben Peterson, Edmund M. Pond, E. Arnold Praeger, William L. Robinson, William Wotkyns Seymour, William H. Taylor, Franklin Townsend, Edwin Walker, and John F. Winn.

Upon recommendation of the Executive Council the following-named physicians were invited, by vote of the Association, to participate in the proceedings as members by invitation:

Drs. James Thorburn, Toronto; John L. Bray, Chatham; Thomas J. Harrison, Selkirk; Brooks H. Wells and R. B. Granger, New York City; Marcell Hartwig, Buffalo; A. Walter Suiter, Herkimer, N. Y.; Walter B. Jones, Rochester; George W. McPherson, Lancaster, N. Y.; N. C. Morse, Eldora, Iowa; David J. Minchin, Berlin; R. B. Mitchell and F. H. Mitchell, Delaware; John McLean, Orilla; Edward J. O'Connor, Ottawa; A. T. Skillington, Kentville; W. R. Nichols, Baden; S. Cummings and James White, Hamilton; A. F. Rice, Woodstock; R. W. Garret and K. A. Fenwick, Kingston; and D. A. Dobie, A. Primrose, Alexander Davidson, H. A. Bruce, J. N. E. Brown, W. F. Bryant, H. Crawford Scadding, Alton H. Garratt, C. J. Hastings, C. Algernon Temple, Elias Clouse, F. C. Hood, D. Gilbert Gordon, N. A. Powell, W. H. Pepler, T. S. G. Starr, Edmund E.

King, Anna E. Carveth, Julia Thomas, Andrew R. Gordon, Adam Lynd, B. Z. Milner, George H. Carveth, John M. Mosher, O. Oustho-strup, W. H. Alexander, Holford Walker, Charles O'Reilly, Allen Bains, J. H. Burns, W. H. B. Aikins, A. B. Atherton, L. MacFarlane, Walter M. Keown, William Caniff, and W. Scott, of Toronto.

First Day—*Wednesday, September 19th.*

Morning Session.—The Association convened in the Council chamber of the College of Physicians and Surgeons, and in the absence of the President, Dr. Rohé, was called to order at 10 o'clock by the Second Vice-President, Dr. George F. Hulbert, of St. Louis, Missouri.

Dr. Hulbert said: The time has arrived for the opening session, and the first business in order on the program will be an Address of Welcome, by Dr. James Thorburn, of this city, on behalf of the medical profession of Toronto.

ADDRESS OF WELCOME BY DR. THORBURN.

Mr. President and Fellows of the Association: I was going to commence with the time-honored saying that I am unaccustomed to public speaking. I can hardly claim that, but at the same time I feel a little hesitancy for certain reasons in addressing you, and you must not expect me to say more than a few words of welcome on behalf of the profession of Toronto. Toronto is quite a central city for conventions. We are proud of our city. We feel proud of our country and our laws. From time to time conventions are held here of commerce and trade, of different branches of science, and some of them are heralded with great trumpets. You must not expect anything of the kind. Your calling is more noble than any of these, although I do not underestimate the commercial value of the different trades and professions. You are called upon to relieve pain and prolong life, which is the most noble of all callings.

In the special department of gynecology great progress has been made within the last few years, and you know it better than I can tell you. I was a pupil of Sir James Y. Simpson, and since he introduced anesthesia as the reliever of pain in the practice of midwifery and operations upon the female sex great advancement has been made. We are very glad to have you meet in this hall because we feel that we have medical laws that are not surpassed by any on this continent; our requirements and curriculum are perhaps the highest in America, and are not excelled by any in Europe. It matters not from what

country or university students graduate, whether in Great Britain, France, Germany, or elsewhere, it does not give them power to practise in this country. We have a Board of Examiners before whom they must appear in order to get a license to practise in Canada. The examinations are now going on in this building, and we shall be glad to have any of you see how they are conducted.

Again, gentlemen, I welcome you in behalf of the profession of Toronto to this Queen City of the North. We hope your visit will be instructive and interesting; that your sessions will be profitable; and that in the near future you may think well enough of this city to return. We thank you for honoring us with this visit. (Applause.)

RESPONSE BY DR. HULBERT.

DR. THORBURN: In response to your kind welcome, on behalf of the Association I desire to say that we are pleased to be here. As far as I am personally concerned, it is a rare treat, and doubtless there are others in the Association who feel likewise. We shall partake of the hospitality extended to us to the fullest extent. It is one of the features with doctors who attend medical associations never to fail to enjoy the things that present themselves. Another feature of our Association possibly the profession of Toronto may not be familiar with: that is, if you will attend our meetings you will observe an atmosphere of earnestness, good-will, fraternal feeling, and work. We have no time for anything else during our working hours. Furthermore, we always extend an invitation to the local and visiting physicians to participate in our discussions. With these few words of response, we will now take up the regular program.

Papers were then read as follows:

1. "The Incision in Abdominal Surgery—Methods and Results," by Dr. J. Henry Carstens, of Detroit.

Discussed by Drs. Macdonald, Reed, Cushing, Frederick, Longyear, Maclean, Tappey, and in closing by Dr. Carstens.

2. "Perineal Operations," by Dr. Joseph Price, of Philadelphia.

Discussed by Drs. Cushing, Hayd, Cordier, Carstens, Potter, Dunning, Longyear, Stone, Glasgow, Davis, Hoffman, Dewees, Miller, and in closing by the author.

The Association at 1 o'clock adjourned until 2.30 P. M.

Afternoon Session, 2.30 o'clock.

The Vice-President, Dr. Hulbert, in the Chair.

3. "The Care of Pregnant Women," by Dr. W. B. Dewees, of Salina, Kansas.

Discussed by Drs. Carstens, Hoffman, Longyear, Reed, Duff, Price, Cushing, Jones, and in closing by Dr. Dewees.

4. "Appendicitis, with a Report of Seven Cases Surgically Treated—Four of which were Operated in Thirty-seven Consecutive Hours," by Dr. George S. Peck, of Youngstown, Ohio.

5. "Appendicitis—Observations Based on the Clinical Study of Eighty-four Cases," by Dr. Willis G. Macdonald, of Albany.

6. "Surgical Appendicitis," by Dr. Joseph Hoffman, of Philadelphia.

On motion, the discussion on these three papers was postponed until the evening session.

The Association at 5 o'clock adjourned until 8 P.M.

Evening Session, 8 o'clock.

The Second Vice-President, Dr. Hulbert, in the Chair.

7. The first order on the program was "Report of Some Interesting Abdominal Operations, with Exhibition of Specimens," by Drs. Ross, Macdonald, Cordier, and Hartwig.

The reports and specimens were discussed by Drs. Reed, Potter, Vander Veer, Carstens, Sexton, Maclean, Price, and Glasgow.

The discussion on appendicitis was next proceeded with, and was opened by Dr. Robert T. Morris, and continued by Drs. Price, Cordier, Murphy, Carstens, Cushing, Davis, Vander Veer, Reed, Ross, Griffith, Hartwig, Maclean, McMurtry, Macdonald, and Hoffman.

At midnight the Association adjourned until Thursday morning.

SECOND DAY—*Thursday, September 20th.*

Morning Session, 10 o'clock.—Dr. Hulbert, the Second Vice-President, in the Chair.

8. "A Question of Priority," by Dr. W. B. Dorsett, of St. Louis.

Discussed by Drs. Cushing and Carstens.

9. "Remarks on the Surgical Treatment of Intussusception in the Infant," by Dr. Henry Howitt, of Guelph.

10. "Demonstration of a Method of Intussusception in Rabbits," by Dr. Robert T. Morris, of New York.

Discussed by Drs. Dunning, Longyear, Stone, Hayd, and Morris in closing; and Dr. Howitt's paper by Drs. Davis, Rosenwasser, and in closing by the author.

11. "Treatment of Distention of the Fallopian Tubes Without Laparatomy and Removal," by Dr. Frank A. Glasgow, of St. Louis.

12. At the conclusion of Dr. Glasgow's paper a discussion followed on "Inflammatory Disease of the Uterus and Appendages and of the Pelvic Peritoneum."

The discussion was opened by Dr. William Warren Potter, of Buffalo, with (*a*) "Introductory Remarks," and continued under the following heads: (*b*) "Clinical History," by Dr. Charles A. L. Read, of Cincinnati; (*c*) "Causation and Pathology," by Dr. Lewis S. McMurtry, of Louisville; (*d*) "Diagnosis and Prognosis," by Dr. James F. W. Ross, of Toronto; (*e*) "Treatment," by Drs. M. Rosenwasser, A. Vander Veer, J. H. Carstens; (*f*) "Under Various Methods of Treatment," by Dr. Joseph Price, of Philadelphia.

In connection with the above discussion, Dr. A. H. Cordier, of Kansas City, read a paper entitled "Hydrosalpinx."

13. "The Present Status of Treatment of Pelvic Inflammation," by Dr. W. B. Dorsett, of St. Louis.

On motion, the Association adjourned until 3 P. M.

Afternoon Session, 3 o'clock.

President Dr. George H. Rohé in the Chair.

14. "Relations of Renal Insufficiency to Operations," by Dr. C. C. Frederick, of Buffalo.

15. "Some Results of Ether Anesthesia in Abdominal Operations," by Dr. I. S. Stone, of Washington, D. C.

16. "The Cause of Thirst Following Abdominal Section," by Dr. Eugene Boise, of Grand Rapids.

On motion, the discussion on the above papers was postponed until after the delivery of the President's Address.

17. Dr. Hulbert then took the Chair, and President Rohé delivered his Address. He selected for his subject "Post-Operative Intestinal Obstruction and Its Treatment."

On motion, the Address was referred for publication.

The discussion of the preceding papers was then taken up, and was opened by Dr. Boise and continued by Dr. Frederick.

18. "Report in Abdominal Surgery: Synopsis of 145 Operations Not Previously Reported, Done upon the Uterus and Appendages, with Remarks upon Preparation of Patient, Place of Operation, Use of Drainage, Treatment, and Result," by Dr. A. Vander Veer, of Albany.

Discussed by Drs. Dunning, McMurtry, Hulbert, Cordier, Ross, and in closing by Dr. Vander Veer.

On motion, the Association adjourned until Friday morning, 9.30 o'clock.

THIRD DAY—*Friday, September 21st.*

Morning Session, 9.30 *o'clock.*—The President in the Chair.

19. "Nephrectomy, Report of Four Cases, with Remarks on Indications for Operation," by Dr. L. H. Dunning, of Indianapolis.

Discussed by Drs. Rosenwasser, Davis, Cordier, Hartwig, and in closing by the essayist.

20. "Chronic Progressive Atrophy of the Vulva (Kraurosis Vulvæ), Its Pathology and Radical Treatment," by Dr. Charles A. L. Reed, of Cincinnati.

Discussed by Drs. Dorsett, Cordier, Longyear, Dunning, Macdonald, and in closing by the essayist.

21. "Element of Habit in Gynecic Disease," by Dr. George F. Hulbert, of St. Louis.

Discussed by Drs. Vander Veer and Davis.

22. On motion of Dr. McMurtry the regular order was suspended and Dr. J. B. Murphy was invited to address the Association on "Intestinal Anastomosis," which he did.

Dr. Murphy's remarks were discussed by Dr. Vander Veer.

23. "Restoration of Intestinal Continuity Without Mechanical Devices," by Dr. W. E. B. Davis, of Birmingham.

Discussed by Drs. Cordier, Macdonald, Murphy, and in closing by Dr. Davis.

Adjourned.

Afternoon Session, 2.30 *o'clock.*

The President in the Chair.

24. "Notes of a Case of Cholelithiasis," by Dr. Frederick Blume, of Allegheny, Pennsylvania.

25. "A New Operation for the Radical Cure of Inguinal and Femoral Hernia," by Dr. Charles A. L. Reed, of Cincinnati.

Discussed by Drs. McMurtry, Jones, Hartwig, and discussion closed by the essayist.

26. "Hysterectomy for Cancer," by Dr. E. W. Cushing, of Boston.

Discussed by Drs. Griffith, Hulbert, Reed, McMurtry, and Boise.

27. "Congenital Diaphragmatic Hernia—Report of Two Cases," by Dr. H. T. Machell, of Toronto.

The following papers were read by title and ordered published in the *Transactions:*

1. "Relation of Hysteria to Structural Changes in the Uterus and Adnexa," by Dr. A. P. Clarke, of Cambridge, Mass.

2. "Intercurrent Typhoid Fever in Pregnancy," by Dr. Thomas E. McArdle, of Washington.

3. "Infectious Diseases During Pregnancy," by Dr. Adam H. Wright, of Toronto.

4. "Vaginal Fixation of the Uterus as a Cure for Retro-Displacements," by Dr. Clinton Cushing, of San Francisco.

5. "The Present Status of the Surgical Treatment of Uterine Fibroids," by Dr. L. S. McMurtry, of Louisville.

6. "Abdominal Section in Ectopic Gestation where the Fetus is Living and Viable, with Report of a Successful Case," by Dr. X. O. Werder, of Pittsburg.

7. "Supplementary Paper on Abdominal Section in Intra-pelvic Hemorrhage," by Dr. M. Rosenwasser, of Cleveland.

8. "Extra-uterine Pregnancy," by Dr. H. E. Hayd, of Buffalo.

Dr. George F. Hulbert, of St. Louis, offered the following resolution, which was seconded and unanimously carried:

Resolved, That the thanks of this Association be and are hereby tendered Messrs. A. E. Goodhart, T. G. Blackstock, and Dr. James F. W. Ross for the delightful yacht sail and the entertainment at the Royal Canadian Yacht Club House; to the profession of Ontario in general, and especially for their deep interest and attendance at our sessions, and for extending to us as individuals as well as in a general capacity the use of the Council chamber of the College of Physicians and Surgeons, and the many other pleasant incidents of our visit; to the officers and members of the Toronto Athletic Club for courtesies extended on Thursday evening; to the civic authorities of the Province of Ontario for the recognition and welcome we have received, and to the Committee of Arrangements, Drs. Ross, Cameron, Nevitt, Machell, and Wright, our especial thanks are due for their indefatigable labors and attention to all the needs of the Association and its Fellows.

As the President-elect, Dr. Carstens, had left for home, the usual formality of inducting him into his office was postponed until the beginning of the next session.

President Rohé, in retiring, said: The Chair desires to thank all of the Fellows of the Association and all the guests who have been with us and contributed so much to the interest of this meeting. It has been evident to the Chair that unless the Fellows had been prompt in recognizing the authority of the Chair our business could not have been expedited as it has been. I believe you will agree with me that the business of this Association has not lagged; that we have been constantly at work ever since I have been here, and I understand that you worked harder before I came. I would recommend to the Executive

Council hereafter not to provide so much work, but to give us a chance to breathe and to smoke, and possibly indulge in other habits. (Laughter and applause.)

I hope every one of the Fellows who have attended this meeting will attend the next, and that every one who has read a paper here will have one next year, and that every one who has not read a paper will present one next year.

On motion, the Association then adjourned to meet at the time and place to be appointed by the Executive Council.

Executive Sessions.

Wednesday, September 19th.

Vice-President Hulbert in the Chair.

The Secretary, in behalf of the Executive Council, presented a list containing the names of candidates for Fellowship. The Association then elected by ballot the following-named candidates:

Honorary.—Professor Charles Jacobs, Brussels; Dr. Donald Maclean, Detroit, Mich.; Professor Kronid Slaviansky, St. Petersburg.

Ordinary.—Dr. John Young Brown, Jr., Lakeland, Ky.; Dr. Thomas Jefferson Crofford, Memphis, Tenn.; Dr. S. M. Davega, Chester, S. C.; Dr. Fayette Dunlap, Danville, Ky.; Dr. Jefferson Davis Griffith, Kansas City, Mo.; Dr. Herman E. Hayd, Buffalo, N. Y.; Dr. Stephen Yates Howell, Buffalo, N. Y.; Dr. Walter A. Jayne, Denver, Col.; Dr. Charles G. Jennings, Detroit, Mich.; Dr. John Albert Larrabee, Louisville, Ky.; Dr. John Wesley Long, Richmond, Va.; Dr. William Samuel Love, Winchester, Va.; Dr. Joseph Meyer, Honey Grove, Texas; Dr. Edward McGuire, Richmond, Va.; Dr. John B. Murphy, Chicago, Ill.; Dr. Charles Stover, Amsterdam, N. Y.; Dr. Ernest Taylor Tappey, Detroit, Mich.; Dr. Hugh M. Taylor, Richmond, Va.

The Treasurer, Dr. X. O. Werder, of Pittsburg, presented his report, showing a balance on hand of $79.40. The Secretary also reported the accounts and vouchers with reference to the contingent expenses for the fiscal year.

On motion, the President appointed as Auditing Committee Drs. Banta and Rosenwasser.

The Auditing Committee subsequently reported that the accounts and vouchers of the Secretary and Treasurer had been carefully examined and found correct..

The Secretary stated, as a matter of information, and to be considered by the Fellows at a later session, that two invitations had been received,

one from Dr. J. B. S. Holmes, urging that the Association meet in Atlanta, in 1895, and one from Dr. James T. Jelks, inviting the Association to hold its next annual meeting in Hot Springs, Ark.

Thursday, September 20th.

The Executive Session was called to order by the President at 6.30 o'clock at the Toronto Athletic Club.

The Secretary stated that the first business in order was an amendment to the Constitution, offered by Dr. McMurtry, last year, which reads as follows: "*Resolved*, That the clause 'They shall pay an entrance fee of $25.00' be stricken from Article V. of the Constitution, which relates to Corresponding Fellows, and substitute therefor 'They shall pay an annual fee of $5.00.'"

On motion of Dr. Carstens the amendment was adopted.

The next subject for consideration was the place of meeting: Pittsburg, Atlanta, Hot Springs, and Louisville were proposed as places for the next meeting.

On motion, the time and place of meeting were left to be announced by the Executive Council. (See Note, p. 43.)

The following-named Fellows were elected by ballot as officers for the ensuing year:

President, Dr. J. Henry Carstens, of Detroit, Mich. *First Vice-President*, Dr. W. E. B. Davis, of Birmingham, Ala. *Second Vice-President*, Dr. Henry Howitt, of Guelph, Ont. *Secretary*, William Warren Potter, of Buffalo, N. Y. *Treasurer*, Dr. X. O. Werder, of Pittsburg, Pa. *Executive Council*, Drs. Charles A. L. Reed, James W. Ross, Joseph Price, A. Vander Veer, and L. S. McMurtry.

Dr. McMurtry moved that the thanks of the Association be tendered to the Second Vice-President, Dr. Hulbert, for the very efficient and graceful manner in which he had presided in the absence of the President during the first three sessions.

Seconded and carried.

Dr. Hulbert moved that a committee of three be appointed by the Chair to report next year upon the advisability and practicability of starting a movement for the establishment of an international home for aged and disabled physicians.

Seconded by Dr. Reed and carried.

President Rohé then introduced Dr. Carstens, the President-elect, who said:

MR. PRESIDENT AND GENTLEMEN: I appreciate the distinguished honor you have conferred upon me, but it seems to me there are members of this Association who have done much more to advance its interests than I have and who really deserve this position more than I do. It is an honor to be elected President by such distinguished men, and I shall do my best to discharge the duties that devolve upon me. Again, I thank you. (Applause.)

There being no further business the Executive Session adjourned.

WILLIAM WARREN POTTER,
Secretary.

NOTE. The Executive Council subsequently appointed the Eighth Annual Meeting to be held in Chicago, Ill., beginning the third Tuesday of September, 1895.

PAPERS

READ AT THE

SEVENTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD IN THE

COLLEGE OF PHYSICIANS AND SURGEONS,

Toronto, Canada,

SEPTEMBER 19, 20, AND 21, 1894.

THE PRESIDENT'S ANNUAL ADDRESS.

INTESTINAL OBSTRUCTION FOLLOWING OPERATIONS IN WHICH THE PERITONEAL CAVITY IS OPENED.

By GEORGE H. ROHÉ, M.D.,
BALTIMORE.

INTRODUCTION.

Permit me here to express formally my appreciation of the honor conferred upon me in electing me to the distinguished position of your presiding officer. I am not conscious of having done anything to merit this high distinction, and can only attribute your action to personal friendship. For the honor I give you my heartfelt thanks.

I may congratulate the Association upon the excellent prospects of the present meeting. The rich and varied program before you shows that our indefatigable Secretary has not allowed the Fellows to rest upon laurels achieved in the past, but has stimulated them to continued work. The entertainments offered by our generous hosts are sufficiently numerous and diversified to satisfy the tastes even of those who might come for diversion only. Happily, however, we have none such in our Association. Our resident Fellows in this beautiful city had prepared such an elaborate festival program that the Executive Council, in the interest of science, was compelled to cut it down to a point which would leave *some* time for the reading of papers and the discussions.

Early in the present year an invitation was received through our Honorary Fellow, Dr. August Martin, Secretary of the Berlin Obstetrical and Gynecological Society, requesting the attendance of

an official delegate from this Association at the celebration of the fiftieth anniversary of the founding of the Berlin Society. By a vote of the Executive Council the President was appointed as your representative to attend the meeting in Berlin in May last. The courtesies extended by the Berlin Society were extremely cordial and graceful, and the action of this Association in accepting the invitation was warmly appreciated. I was highly gratified to find that the work and the workers of this Association are fully recognized and admired by our European colleagues.

While we have reason for gratification at the constant accessions to our ranks, we have to mourn this year the passing of one of our Founders, Dr. Hampton Eugene Hill, of Maine, and of two of our most distinguished Honorary Fellows, Dr. Alexander Dunlap, of Springfield, Ohio, and Dr. Arthur Wellesley Edis, of London.

Dr. Dunlap was a veteran abdominal surgeon. Those who at our Cincinnati meeting had the privilege of hearing his own account of his first ovariotomy, done just fifty-one years ago,[1] can appreciate what courage was necessary in those days to open the abdomen.

Dr. Edis was well known to us all through his admirable manual on the *Diseases of Women* and other publications on gynecological subjects. He also held at one time the distinguished position of President of the British Gynecological Society.

Dr. Hill was a Founder and enthusiastic Fellow of this Association. He was a modest gentleman and a fearless and ready surgeon, fulfilling the demand of Dr. Dunlap that a surgeon must be a man who can always "keep himself perfectly calm and his mind free from excitement under all circumstances." Those who have heard Dr. Hill relate his experiences in abdominal surgery realize that he was such a man. His record, perhaps unique, of twenty-five recoveries in a first series of twenty-six operations, is one that all of us who are less gifted and less successful may well envy.

The temptation is strong to linger over the details of these noble lives and draw from them lessons to guide and uplift us who remain, but this is a duty that must be left to others more competent.

The choice of a subject upon which to address you from the chair has been difficult. Not, indeed, from a paucity of topics demanding discussion, but from a feeling that any attempt on my part to offer

[1] September 17, 1843.

ex cathedra opinions would be presumptuous. I may be pardoned, however, for briefly drawing your attention to the frequent occurrence of

INTESTINAL OBSTRUCTION FOLLOWING OPERATIONS IN WHICH THE PERITONEAL CAVITY IS OPENED.

Obstruction of the bowels causes between 1 and 2 per cent. of the deaths following ovariotomy and other operations involving opening of the peritoneal cavity. Sir Spencer Wells lost 11 out of his first series of 1000 cases of ovariotomy from this cause (1.1 per cent.). Fritsch[1] places his mortality from ileus post laparatomiam at 1.6 per cent. Klotz[2] has reported 31 cases of intestinal obstruction with 5 deaths due to this complication in a series of 421 abdominal sections and 148 vaginal extirpations of the uterus. I have been able to collect in the literature and from personal communications no fewer than 75 deaths from this cause. While this number seems large, it probably represents less than half of the deaths properly attributable to this accident, for there can be no doubt that not a few fatal cases of peritonitis and intractable vomiting after laparatomy are really cases of obstruction of the bowels.

Secondary or post-operative intestinal obstruction may be roughly divided into two classes of cases, one due to mechanical causes—adhesions, peritoneal bands, volvulus, accidental fixation by sutures, etc., and perhaps compression in exudation masses—and another due to paralysis of peristaltic movement of the intestines following sepsis or injury to the nerve supply of the muscular coat. The obstruction may be acute—*i. e.*, occur immediately after or within a few weeks subsequently to the operation—or it may develop gradually and not become complete until months or years afterward.

The majority of cases in which the cause of the obstruction was ascertained by operation *intra vitam*, or by necropsy, have been found to be due to abnormal fixation of the intestines by adhesions or to compression by peritoneal cords or bands inflammatory in origin. The statement is attributed to Olshausen, that obstruction after ovariotomy is always due to adhesions between the bowel and the pedicle. A striking instance of this form is related by Sir Spencer Wells.[3] I have, however, observed a case in the practice of the late Prof. Erich, of Baltimore, where the small intestine was doubled

upon itself and so firmly adherent that the gut was entirely impervious. Similar cases have been reported by Skutsch and G. M. Tuttle[4] after the removal of the uterine appendages. Adhesions of a knuckle of bowel to the abdominal incision or to other portions of the abdominal wall have frequently been found to be the cause of the obstruction, the abnormal fixation causing acute flexure of the intestinal tube. Any hindrance to the passage of the contents of the bowel at the point of flexure causes dilatation above and consequent increase of the degree of flexion. When this occurs there is at first increased peristalsis, but if the obstruction is not soon overcome the circulation is interfered with, dilatation of the bowel with paralysis of its walls follows, and the anatomical picture of the obstruction is complete.

Sir Spencer Wells[5] illustrates another form of obstruction in which a coil of small intestine slips into Douglas's cul-de-sac and becomes fixed there by adhesions. Krug has reported a case in which the descending colon was found glued fast at a right angle to the posterior surface of the uterus.[6] Our distinguished Fellow, J. F. W. Ross, has reported a case where obstruction occurred five weeks after a complete abdominal hysterectomy. After death it was found that a small portion of intestine had become adherent to the abdominal incision behind the edge of the omentum, and that another loop had slipped through above this adhesion between the bowel behind and the abdominal wall in front, and had thus become obstructed." Secondary operation, which would doubtless have given relief, was advised, but was rejected by the friends of the patient.

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Fritsch mentions a case where a fold of the bowel was caught under a suture, and another in which the bowel was found in the incision between two sutures. He thinks the bowel was forced between the separated edges of the incision during retching and vomiting. I should not have believed this possible had I not seen how widely apart sutures are placed by some of our European colleagues. Sir Spencer Wells "heard of a case where a coil of intestine slipped through one of the loops of wire used as sutures for the wound, and was tightly compressed when the wire was fastened." Our Fellow, Joseph Price,[7] quotes an interesting case from Louis, where an adherent ovarian cyst, emptied by the trocar, so dragged upon the bowel as to cause obstruction. The opinion is expressed by Price that some cases of obstruction, post laparatomiam,

are due to leaving old bowel adhesions undisturbed at the time of operation. Fritsch seems to lean to a similar view. My friend, Professor B. B. Browne, of Baltimore, has recently given me the particulars of a case occurring in his practice in which death ultimately resulted from an obstruction undoubtedly present before operation. The symptoms in this case pointed to bowel obstruction, but an acute inflammatory condition of the uterine appendages was found which was believed to account for the symptoms. Some days after the section evidences of obstruction presented themselves and led to a secondary laparatomy. Some adhesions were found, which were released, and the patient improved. She subsequently died, however, and on post-mortem examination a knuckle of bowel was found in a peritoneal slit, causing sufficient obstruction to obliterate the lumen of the gut. I. S. Stone, Fellow of this Association, has quite lately reported a similar case.[8] Lauenstein[9] has described in an interesting manner the varied and curious forms assumed by intestinal and omental bands and adhesions, and has indicated the only rational method of treating them.

Among the cases of constriction by peritoneal bands, one related to me by Dr. Charles Jacobs, of Brussels, deserves to be mentioned. Here the constricting band consisted of the elongated adhesion between the uterus and anterior abdominal wall following ventrofixation.

Some cases have been observed in which the obstruction was due to an internal hernia through an opening in the omentum, as in Browne's case above related. Skene Keith reports a somewhat apocryphal case in which obstruction was produced by an epiploic appendix passing through one of the side holes of a drainage-tube. After removing the tube the obstruction was relieved.

Volvulus sometimes occurs after abdominal section, but probably only after some previous adhesion or constriction of the bowel. Two cases reported by Nieberding[10] illustrate this. In one case a fatal volvulus of the small intestine occurred after an ovariotomy. During the operation a portion of adherent omentum was excised, and at the post-mortem examination it was found that the raw surface of the omental stump had become adherent to a loop of the small intestine, and that a volvulus existed above the point of fixation. In another case, in which the omentum was very short, symptoms of acute obstruction set in on the second day. Ordinary treatment

being of no avail, the incision was reopened and a coil of intestine found adherent to the margin of the wound. After separating this a volvulus was found, which was untwisted. The patient subsequently died of peritonitis, which the reporter attributed to the obstruction.

There seems no question that by far the larger proportion of cases of post-operative intestinal obstruction are due to adhesions of the intestines to each other, to the abdominal walls, or to other viscera. This being so, it becomes necessary to inquire what causes the adhesions and if these can be prevented. Sepsis, destruction or separation of the peritoneum, the use of strong chemical antiseptics in the abdominal cavity, rough handling of the visceral or parietal peritoneum by sponges, hands, or instruments, prolonged exposure of the peritoneum to the air, and the use of certain suture materials have all in turn been accused of producing adhesions. Experiments and clinical observation have, however, shown that not one of these conditions is sufficient to account for all cases. It is well known that intestinal or omental adhesions to the margins of the incision are found in nearly every case in which the abdomen is opened subsequently to laparatomy, and that they occur in cases in which all the above-mentioned conditions can be excluded. On the other hand, Küstner has reported a case showing strikingly that adhesions sometimes do not occur where they might reasonably be expected. He removed a very large tumor having firm adhesions to parietal peritoneum, omentum, bladder, fundus uteri, broad ligament, and sigmoid flexure. The adhesions were separated by the fingers and by the thermo-cautery. The coils of intestine were adherent and matted together. These were all carefully separated. Fourteen months later a secondary laparatomy for ventral hernia showed an absence of adhesions, either of the intestines to each other, to the parietes, or to the other abdominal viscera.

The symptoms of intestinal obstruction post laparatomiam are essentially the same as those of primary obstruction. They are, however, often masked by pain, vomiting, and tympanites—so frequently present after abdominal operations without being significant of obstruction. Unless the obstruction is due to some untoward occurrence in the technique, the significant symptoms are not likely to be present for several days subsequent to the operation. If a patient does well for three or four days, or longer, after an abdomi-

nal section or vaginal extirpation, and is then suddenly attacked by pain followed by vomiting, tympanites, and inability to pass feces and flatus, the diagnosis of intestinal obstruction is probable. If the vomiting becomes fecal, the pulse rapid, the urine scanty, and symptoms of collapse set in, the diagnosis becomes reasonably certain. Unfortunately, however, all these symptoms are not uniformly present in obstruction. When the obstruction is high up in the small intestine fecal vomiting is usually absent, and distention is likewise less marked. In these cases, also, the bowels may move several times after the pain begins, so that the diagnosis may be more or less uncertain.

Recent observations have furnished additional data upon which to base an opinion. The late Prof. Von Wahl,[11] of Dorpat, first called attention to the occurrence of local distention of the bowel above the point of occlusion in mechanical obstruction. This distention begins at the point of obstruction and extends upward along the course of the bowel. In mechanical obstruction, therefore, if the case can be observed from the beginning, there will be found an elastic swelling localized at a point of the abdomen and gradually enlarging, the direction of increase in size being along the course of the constricted bowel above the constriction. The distention is attributed to rapid decomposition of the arrested intestinal contents. Coincident with this local meteorism is an increased peristaltic movement of the bowel, also above the obstruction, especially insisted upon by Obalinski[12] and Schlange.[13] The observations of Von Wahl have been experimentally confirmed by Von Zoege-Manteuffel[14] and Kader.[15] Obalinski and James Israel[16] have also proven the clinical value of Von Wahl's sign. Obalinski lays great stress upon the accurate observation of these symptoms especially early in the course of the trouble. In the later stages, particularly if septic peritonitis with paresis of the intestinal walls has occurred, these distinguishing signs are no longer available. In cases of obstruction due to paralysis of the intestine from the beginning (probably always a consequence of septic peritonitis) these symptoms are not present. Here there is a uniform globular distention of the abdomen without movement of the intestines, and without noticeable contours of the bowels through the abdominal walls.

An additional diagnostic sign, according to Rosenbach, Rosin,

and others,[17] is furnished by the urinary reaction. It is claimed that in complete obstruction of the ileum there is always indican in the urine. In obstruction of the colon, or high up in the small intestine, this reaction is usually not present. The reaction is obtained by boiling a small quantity of the urine in a test-tube and adding nitric acid *guttatim*. The urine turns to a Burgundy-red color, and a similarly-colored precipitate is thrown down. This has been shown by Rosin to be a mixture of the urinary coloring-matters known as indigo-blue, indigo-red, and indigo-brown. If urine yielding this reaction is shaken, a violet-colored foam is produced. Rosenbach attributes great prognostic significance to this reaction. So long as it remains the case is a grave one. If, after operation for relief of the obstruction the reaction persists, the obstruction has not been removed. In cases where the obstruction is relieved the reaction disappears within twenty-four hours. Our Fellow, J. H. Branham,[18] has recently confirmed Rosenbach's assertion. While this sign must be regarded as a very important one, it is not absolutely pathognomonic, as a similar reaction occurs in some other morbid conditions.

The prognosis of primary intestinal obstruction is sufficiently grave. Following closely upon an operation so serious in itself as abdominal section or vaginal extirpation of the uterus, this gravity is enormously increased. The abdominal surgeon should, therefore, be prepared to recognize promptly and appropriately treat this unwelcome complication.

Fitz[19] expresses the result of much unfortunate experience when he says: "In the light of exact knowledge nearly all cases of acute mechanical intestinal obstruction die unless relieved by surgical interference." And as a corollary may be quoted the opinion of Senn:[20] "Intestinal obstruction is a surgical lesion in every sense of the word, and should be treated from the very beginning upon common-sense surgical principles." This does not mean, of course, that the knife should be resorted to at once in the treatment of this condition, but that when other means fail to give relief the surgeon should not hesitate to operate, as delay, in cases not otherwise curable, always increases the danger of operative measures. Bearing upon this point Senn says: "An abdominal section in the treatment of intestinal obstruction is always necessarily attended by severe shock, and it is therefore of the utmost importance to per-

form the operation at a time when the organs of circulation and the nervous system are still in a condition to resist successfully the immediate effects of the operation."

However, the boldest surgeon hesitates to resort to such a serious operation as abdominal section for intestinal obstruction unless the diagnosis of mechanical obstruction is perfectly clear. Some cases are so plain in their indications that the only honest choice is to operate or do nothing, and to a surgeon the latter would hardly seem a creditable alternative. But cases occur where the nature of the obstruction is not entirely clear. The symptoms may point to obstruction by means of adhesions, peritoneal bands, or volvulus, and yet there is a possibility that there may be simply functional obstruction. In such cases other means may be tried until it is found that they are ineffective.

Little need be said here of the so-called "medical treatment" of intestinal obstruction. If any one chooses to treat such cases with opium or drastic purgatives, I do not envy him the results. But there are certain procedures, not strictly surgical, which are frequently indicated, and, though they are not often curative, certainly give temporary relief. Such measures are stomach-washing, rectal inflation of gas or air, and injection of fluids.

Stomach-washing was first recommended in intestinal obstruction by Kussmaul to relieve the distressing vomiting. Some mild antiseptic lotion containing boric acid should be used. The lavage may be repeated every four to six hours as the vomiting or distention demands. It has been found that considerable gas is removed with the fluid contents of the stomach. Some of the matters in the upper portion of the intestinal tube are likewise siphoned out, and in this way relief always follows the washing out. At the same time it must be remembered that stomach lavage is only palliative and not curative in established mechanical obstruction.

Klotz[21] has had much success in treating acute obstruction following abdominal section by the following method. As soon as symptoms indicating obstruction appear he washes out the stomach with from four to six quarts of warm salt solution. Should this fail to relieve the symptoms he repeats it, and then passes into the stomach through the tube a large dose (one and a half to two ounces) of castor oil. In all cases so treated the active peristaltic movements set up caused passage of flatus and feces within ten hours. Evi-

dently it is only in cases of fresh and friable adhesions that this method can be successful.

Rectal injections of water or air may at times be curative when the obstruction is due to intussusception, volvulus, or to soft adhesions of the lower portion of the intestine, but where the obstruction is due to cords or bands they can manifestly be of no avail. They should therefore not be pushed beyond a reasonable trial. Care must be taken not to use too much pressure in making rectal injections, for fear of rupturing the bowel. Attempts to force the ileo-cecal valve must be regarded always as ill-advised, in spite of the claim sometimes made that fluids can be made to pass this gateway between the large and small intestine in the reverse direction. Too much care cannot be used in passing a rectal tube high up into the colon. I have seen one instance of perforation of the sigmoid flexure where this was attempted.

The rational treatment of intestinal obstruction following abdominal section is to reopen the abdomen either in the line of the first incision or at some other point, seek for the place of obstruction, relieve the same by separating adhesions, dividing constricting or restraining bands, or untwisting a volvulus. If the gut be much distended, an incision to let out the gas and fluid feces may be made and the bowel afterward carefully sutured. Gangrenous intestine must be resected and the ends joined by suture or Murphy's button. At times it may be advisable to do colotomy, but the readiness with which the ends of resected intestine can be joined with Murphy's excellent device will probably render the operation of colotomy for this condition much less frequent than formerly. If the obstruction is due to a volvulus, it would probably be always advisable to resect the twisted portion of the gut, as the volvulus is extremely likely to recur. Keith advises that the long mesentery, always present in volvulus, be shortened by folding it upon itself parallel to the gut, and keeping it in place by a few stitches. A case has been reported by A. H. Cordier,[23] a Fellow of this Association, in which there was constriction of intestine by a peritoneal band, followed by rupture of the gut. Abdominal section was done, the stricture relieved, and an anastomosis made with Murphy's button. The patient recovered.

When practicable, it is probably always better to make the incision in the middle line, as it permits more thorough and ready

exploration. Branham advises that when the abdomen is opened search should first be made for the obstruction in the iliac regions, as here obstruction is most likely to occur. If not found in either of the iliac fossæ, and if it cannot be located by local distention, the entire length of the intestine must be passed through the fingers until the constriction is found. As it not infrequently happens that there is more than one point of constriction, the examination should be thorough.

The distention and congestion of the intestine above, and its pale, empty, and flaccid condition below the constriction will often enable one to find the obstruction readily. Eventration of the intestines should be avoided, if possible, although if the obstruction cannot be otherwise discovered this becomes necessary.

It goes without saying in this audience that the most scrupulous attention must be paid to asepsis during the operation, and that the peritoneal cavity should be thoroughly flushed and drained after relieving the obstruction.

The question naturally presents itself whether anything can be done to prevent the frequent occurrence of intestinal obstruction post laparatomiam. As the obstruction is so often dependent upon adhesions, attempts have been made to prevent these. Robert T. Morris,[23] one of our Fellows, proposes to accomplish this by covering denuded peritoneal surfaces with a film of aristol powder, which he claims prevents subsequent adhesions. The evidence hitherto furnished that aristol accomplishes this seems to me insufficient, but should stimulate to further experiment. August Martin wipes out the pelvic cavity with a sponge saturated with sterilized olive-oil just before closing the incision after a laparatomy. I have not been able to learn whether adhesions are prevented by this procedure. To me it seems a doubtful practice. Obalinski produced purulent peritonitis in a rabbit in which he had used the sterilized oil.

Cases of so-called paralytic obstruction are usually due to septic peritonitis. Here operation is rarely of service, although a case reported by W. W. Keen indicates that even in these cases one need not give up all hope. Keen did a laparatomy, incised the greatly-distended large intestine and emptied it of its contents, flushed and drained the abdomen, and gave strychnine. The patient recovered.

In conclusion, permit me to quote the apt remark of Fritsch:[24] "Fixed rules governing the treatment of intestinal obstruction

following peritoneal operations cannot yet be established. But the greater our experience in these cases the more readily do we lean toward operation. Not, it must be said, that the results have been favorable hitherto, but because no other treatment is of any value in cases of severe obstruction."

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THE INCISION IN ABDOMINAL SURGERY: METHODS AND RESULTS.

By J. HENRY CARSTENS, M.D.,
DETROIT.

When we hear and read so much about ventral hernia, and when we are told that last year Tiemann & Co. made to order six dozen trusses especially for the herniæ resulting from the operation for appendicitis, is it not well for us to pause and to consider if we are really properly closing the incision in the various operations for abdominal morbid conditions? Is it not time for us to devise ways and means to prevent herniæ after abdominal operations?

With some operators the occurrence of herniæ in the line of incision is very common, although they lay down emphatic rules about keeping patients in bed for six weeks, and make them wear strong, heavy bandages for a year or more in order to prevent the occurrence of ventral rupture; while other operators allow their patients to get up in ten or twelve days, leave the hospital in two weeks, do not ask the patients to wear bandages after a few weeks, and still they have seldom to record a case of ventral hernia. There certainly must be a very definite reason why in the track of one abdominal surgeon there follow a great number of ventral herniæ, while in the track of another surgeon it is a rare occurrence.

Is not the reason in the method of making the abdominal incision and closing the wound after the operation is finished?

It certainly seems so to me, and, therefore, I again bring this question up, which has been threshed over so frequently that I am getting tired of it myself. But as long as there are *abdominal* surgeons who stick to one definite way of closing the abdomen—that is, the *en masse* suture—so long will some of us bring up this subject and plead for the ideal, the esthetic surgery in closing the abdominal incision.

We are glad to admit that we are not infallible, and that cases will always occur where, as a result of an extensive adipose development, or as a natural result to be expected in stitch abscess and sepsis, a ventral hernia does occur; still we claim it should be a very rare occurrence. What I plead for is the buried aseptic animal suture, be it kangaroo tendon, squirrel tail, fascia lata, or catgut. I prefer the former, because it is naturally aseptic; it is very strong, and only fine threads are required; it is not absorbed quickly, hence it holds the parts in position for a longer time. There are exceptional cases where time is of prime importance, or for other reasons we may be allowed to use the *en masse* suture—silkworm-gut, silver, or silk—but they are very rare.

My usual procedure is as follows: Take the median incision as an example. I first decide how long an incision I will need, and, with a small, narrow-bladed knife (Fig. 1), with one sweep I make the cut of the desired length through the skin and fat. If the patient is exceptionally fat, I may have to make another sweep of the knife to get through it. I then, with another sweep of the knife, divide the tendinous insertion of the oblique muscles. I may strike the linea alba exactly, and, if not, I get very near to it. I can see by the way the fibres run on which side it is, and then push the rectus muscle to one side and cut through the remainder of all the tissues until I come to the loose cellular tissue beneath the peritoneum. I push my finger through the peritoneum, which I can do if it is thin, but if it has been subjected to repeated attacks of inflammation, and is thick, I lift it up with my forefinger and thumb (above the skin, if possible), so that I can see there is no omentum or intestine adherent to it; then I puncture it with a knife and increase the opening to the desired length, using one or two fingers as a director.

The skin incision is a little longer than all the rest, which are about the same length. If my operation is partly exploratory, I make only very short incisions, and then, finding it necessary to remove a large growth or to put the patient in the Trendelenburg position, I increase my incision to the desired length, using two fingers as a guide beneath the peritoneum, and with one sweep of the knife I cut through all the tissues at once.

The use of grooved directors or scissors may be allowed to beginners, but as they injure and bruise the tissues they are unworthy

FIG. 1.

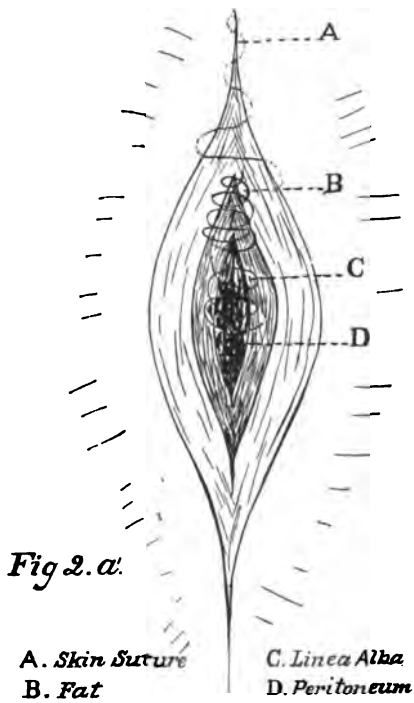


Fig 2. a.

A. *Skin Suture*
B. *Fat*
C. *Linea Alba*
D. *Peritoneum*

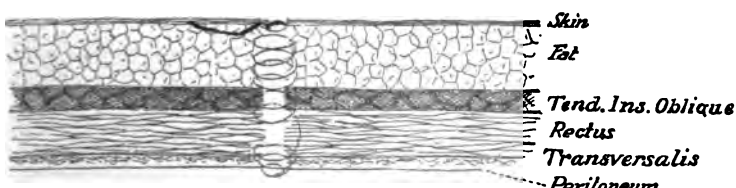


Fig. 2 b. Side View

Fig. 3A.

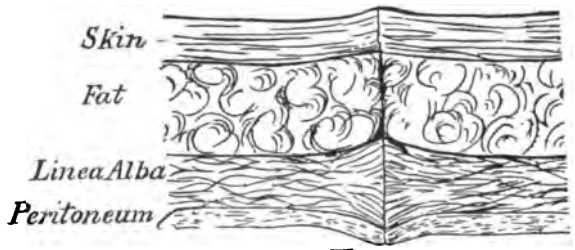


Fig. 3.B.

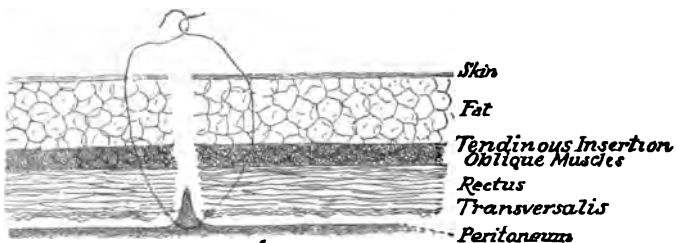


Fig 4

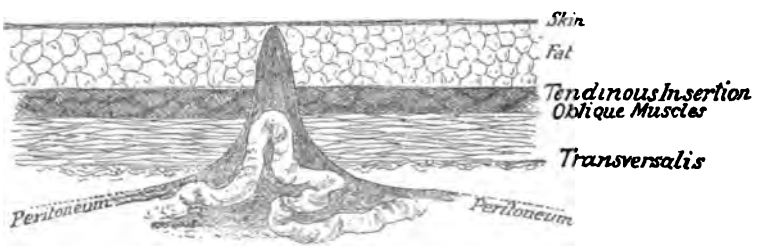


Fig. 5.

of the experienced abdominal surgeon. The bleeding is almost nothing, and such a thing as a catch forceps to an artery or to a bleeding point I rarely use. So that, in short, I would say, as far as the incision is concerned, diagnosticate your case properly in reference to the size and character of the growth and the amount of adhesions; thus you are able to judge how long an incision you need, and make it at once with a clean cut with a knife—no zigzagging or irregular wound, and no bruising of the tissues. The time required to enter the peritoneum should ordinarily not exceed half a minute.

When the operation is finished any aseptic animal tissue will do to sew up the wound; but I prefer kangaroo tendon, as it is stronger, consequently thinner ligatures can be used—that means less foreign substance is introduced, and therefore less danger of sepsis. I use it to tie the pedicle, as it disappears and there is no danger of pelvic abscess, which may continue for years as the result of the use of other ligatures. I use a long, medium-sized tendon, a half-curved Hagadorn needle, and my fingers—no needle-holder. I take the peritoneum and sew it together with a running stitch, putting my needle in a quarter of an inch from the incision. If I have gone through the rectus, with two or three stitches (over-and-over stitches), I bring that together, and then carefully, edge to edge, with the same ligature and the running stitch, bring together the tendinous insertion of the oblique or the linea alba. This, I think, must be done carefully, as nearly the whole strength of the abdominal wall depends upon accurate union of this part. The cellular tissues are then brought together, as they add so much to the strength of the abdominal wall; and the fat, which, if thick, requires two tiers. The skin is then brought together in the methods suggested by Marcy, the so-called cobbler's stitch. Before this time, however, my ligature is generally used up, and I then take a very fine ligature with a *straight* needle and sew up the skin, as I can do it quicker (Fig. 2).

During the whole time every fifth, sixth, or eighth stitch is whipcorded, so as to make a knot and get additional strength. When the last stitch in the skin has been introduced, the needle is run beneath the skin for about an inch and then comes out; the ligature is cut short and retracts beneath the skin; everything is buried. A drainage-tube does not interfere at all.

For fear, however, of post-operative infection, the line of incision should be carefully cleansed and washed with a little ether and then sealed with collodion. The usual dressing is applied and the wound not looked at for ten days or more, unless special indication exists. When the dressing is removed we may expect to find the wound dry, perfectly healed, and no hernia will ever follow. The patient is allowed to sit up the tenth or eleventh day, to walk around by the twelfth, and the fourteenth or fifteenth day she is usually able to walk all around the hospital, and is then allowed to go home. In exceptional cases with a very long incision, or if stitch abscesses follow, the patient is kept a few days longer in bed, but is rarely kept in the hospital longer than three weeks.

This I consider the perfect, ideal method of suturing the abdominal incision. I doubt if it ever can be improved, and I have never seen hernia follow it. I use this for ordinary cases of hernia also, and find it very successful. In very severe cases of umbilical, ventral, or other hernia, I am afraid to trust that method alone, although it often will answer. Still, in such cases it seems to me safer to operate, as I have, by flap-splitting and burying interrupted silkworm-gut sutures. In my experience all cases of umbilical hernia occur in fat patients. If they are still young, there may be great stretching at the umbilicus during pregnancy. If abdominal section has been performed, and if the woman has a ventral hernia and is liable to become pregnant, I do not depend upon kangaroo tendon alone. My method then is about as follows:

I dissect the skin and fat down to the peritoneum, and remove the large hernial sac. The peritoneum is then carefully brought together with kangaroo tendon. The ring, which is generally hard and cartilaginous, I split all around, separate the split, and bring the raw surfaces carefully together in the region of the linea alba. I use interrupted silkworm-gut sutures for this purpose, putting them in a quarter of an inch apart.

In umbilical hernia the opening is circular, and we do not have much trouble in uniting it in the median line; but in ventral hernia the ring is sometimes very irregular, and we must adjust ourselves to the condition, sometimes putting in the suture transversely, sometimes horizontally—that is, in the direction of the linea alba, and in some cases we must put in part of the sutures one way and part in another way. The sutures are well tied and cut very short. The

cellular tissue and fat are now brought together in tiers with kangaroo tendon, and the skin with the same material. The cut is sealed with collodion and the proper dressing applied.

With this method of sewing we would have a union like that shown in the accompanying illustration (Fig. 3), where, at the line of incision, the wall is really a little thicker than at other places, instead of being thinner as in Fig. 4. When the *en masse* suture is used there we find a little depression where the peritoneum comes together, because the latter is generally pulled up a little so as to be brought in that position, and it results, as I have already shown on another occasion, in a development of hernia by the separation of the surfaces from within outward, as in Fig. 5. The least little starting-point will give the intestines an opportunity to act as a wedge, and hernia results.

The only exception I ever make is in some cases of tubercular peritonitis, where I use the *en masse* suture of silkworm-gut, as in my experience animal ligature is often infected by tubercular bacilli, and abscesses result.

This paper is intended for experienced abdominal surgeons, not for general practitioners. For persons with little or no experience, who are obliged in an emergency to make an abdominal section, I think that silk is the best ligature, and the *en masse* suture is the most advisable. Silk and silkworm-gut can be easily kept or made aseptic, and for general practitioners are undoubtedly the best ligatures; but for surgeons who have made abdominal sections their lifework, who have the facilities of a hospital, trained nurses and assistants, it is not the ideal ligature, nor is the *en masse* suture the ideal suture. They should strive to make such a perfect incision and such perfect closures of the wound that, when the patient is well, he or she is well for good, and is not obliged to wear a cumbersome truss, or walk around with a ventral hernia which is sometimes more distressing than the original disease.

RÉSUMÉ.—1. With a small, narrow-bladed, sharp knife, make a clean incision through the skin of the necessary length, and with another sweep (or two) cut through the linea alba, muscle, etc. Lift the peritoneum with the fingers, open it, and enlarge the incision. The use of forceps to lift the tissues, or the grooved directors, is unnecessary.

2. In closing the abdominal incision use animal ligature, kan-

garoo tendon, or catgut. First carefully bring together the peritoneum in a running stitch, then the transversalis fascia, and the rectus if the incision is through the muscle. Then most carefully bring together—edge to edge—the tendinous insertion of the oblique muscles. The loose cellular tissue above and fat can be brought together in one or two tiers, according to thickness. Bring the skin together carefully with Marcy's cobbler's stitch, thus burying all your sutures.

3. Then seal with collodion, and, if everything connected with the operation has been perfectly aseptic, absolute primary union will take place, the different layers of the abdominal wall will have been brought together as nearly as possible as they were in the first place, and no hernia will result.

4. In cases of extensive umbilical, ventral, or other hernia it is best to bring the peritoneum together with an over-and-over stitch of kangoroo tendon or catgut; to make a flap-splitting operation of the ring, which is brought together with silkworm-gut or silver wire, which are buried, and then the fat and skin are united with the buried and animal suture.

DISCUSSION.

Dr. Willis G. Macdonald, of Albany.—Mr. President, I hardly expected to open the discussion on Dr. Carsten's paper, yet there were so many things in it that interested me, and still others that I cannot agree with, that I feel impelled to speak. In his introductory remarks the author spoke of the fact of ventral herniæ following operations for appendicitis. I can conceive very readily, in cases of relapsing appendicitis where we have not an active suppurative process, and where the demand for drainage is not great, that we may close the wound in the way the essayist has described; but there are other conditions in which we have localized abscesses, in which we open the peritoneum, where we find it necessary to drain not only with gauze, but with rubber. Sometimes we have to introduce into the wound a large iodoform tampon in cases of this sort. Dr. Carstens would not say that we could employ this method of procedure by stages. It is in those cases that ventral herniæ occur and in which trusses must be fitted. My experience in abdominal surgery is that by far the greater number

of herniæ have occurred in such cases as these, and I expect them to occur; I do not know of any way to avoid them. We have to tampon, *i. e.*, to pack carefully, if we have a cavity to drain, to prevent pocketing.

In Albany it is not the custom to close wounds by stages; surgeons there have been satisfied with the through-and-through suture. In coming to the meeting with Dr. Vander Veer, and in going over his (Vander Veer's) table of cases for some years back, I find Dr. Vander Veer has about 5 per cent. of herniæ following his operative work. This, I take it, is a relatively small per cent. The introduction of animal sutures in general surgery is not always so successful as it would seem. I have employed kangaroo tendon and the catgut suture in operations for the radical cure of hernia, and have seen a return of the hernia. It is not at all a certain method of preventing its return.

So far as buried silkworm-gut sutures are concerned, my experience has been equally unfortunate. I have removed them at the end of six months. In some operations done for umbilical herniæ I have spent more or less time in hunting for the sutures, getting them out one by one, and since then I have not introduced them buried. I always feel very glad to get them out. Then as to the question of time, it certainly takes considerable time to introduce this row of sutures. The author speaks of the sutures being made thicker, more dense, and I agree with him. This density is really the result of an inflammatory process; it may not be sufficieent to go on to the formation of an abscess or on to the suppurative stage, but we assuredly have a certain amount of infection. It is difficult so to sterilize animal material in the way of catgut and kangaroo tendon that one can feel perfectly comfortable. The abdominal surgeon in order to be sure of asepsis will continue to use silk and silkworm-gut in his operations.

Dr. Charles A. L. Reed, of Cincinnati.—I have listened with a great deal of interest to the paper, but the method of closing the wound as outlined by its author is far from being a perfect one, in my opinion. There are some features of the paper which impressed me as rather confirmatory of the view which I desire to advance. For instance, the author has stated that he uses the buried animal suture by layers in his general run of abdominal cases, and yet in his cases of hernia in young subjects, in which the wound is subjected to intra-abdominal pressure, he deems it inexpedient to use it and fortifies his work with the interrupted *en masse* suture. I wish Dr. Carstens would state by what warrant he assumes, by virtue of the retching which follows

anesthesia, that his cases are not going to be subjected to precisely the same pressure, and, further, why he subjects his patients to the risk of a suture which he finds it necessary to fortify. It occurs to me that there are strange inconsistencies in the method. The paper itself does not enumerate, except by the slightest inference, what occurs to me to be the greatest danger—the most unsatisfactory result of the buried animal suture. The implication is not involved in the statement that the wound seems to be firmer. It is thicker, it is denser, and with my friend from Albany (Dr. Macdonald) I too grant that fact. I believe that the thickened cicatrix means not only a deposit of inflammatory exudate, but the presence of an unabsorbed suture; and if I had contemplated participating in this debate I could have presented specimens of cicatrices, painful in character, which I have been called upon to dissect out to afford relief to my patient. They contained unabsorbed sutures. One was applied in Boston, where it is presumed that this process has achieved its greatest perfection.

Dr. E. W. Cushing, of Boston.—I have long observed that there is a tendency for certain processes to come up and be used, fall into "innocuous desuetude," and then reappear. In regard to this matter of suturing by layers, I believe it was resorted to by Prof. Thomas as long ago as 1887. I do not know that it was new then, but it soon became very prevalent in New York, and seemed to promise a great deal. According to the method of Thomas, which Wylie also used, there were two stitches put through everything, in order to bring the wound together to prevent the formation of pockets. The peritoneum, fascia, fat, and skin were brought together in layers with continuous catgut suture. I published something about this running suture in 1887, and finally gave it up for certain reasons which seemed to me sufficient—namely, in spite of all the care I took I had a larger proportion of cases which did not heal well, especially where there was a large amount of buried suture. The reason is not far to seek. I think the use of the running suture constricts and strangulates the tissue in a way that the interrupted suture does not. You cannot apply a running suture in such a way that it is not liable to cut off the circulation from certain parts of tissue and cause them to necrose, and although there do not appear immediate symptoms of suppuration as would from an infected wound, yet in two or three weeks the wound had to be reopened, and under such circumstances it did not do so well when done in this way as under the old-fashioned way of interrupted sutures.

On the other hand, there is no doubt that in certain cases it is very proper to secure accurate coaptation of the layers; but if we will con-

sider how many needle punctures it involves, how much we wound the tissues, how much we delay the operation by so doing, and how much chance there is of extra infection where there has been pus in the abdominal cavity, I think you will agree with me that the fewer punctures in the abdominal wound we make the better, and the less liability there is for the running suture to constrict the tissues the better. In closing the wound in layers in the manner described, it seems to be admissible to shut off the peritoneum in a long wound, as it can be done rapidly. It is desirable to coapt the fascia accurately in subjects where it is necessary to go through two inches of fat, and in such cases I use the interrupted catgut suture. We want to be sure that the two edges of the fascia are coapted; therefore, it may be advisable to put a few interrupted stitches in the layer of fascia, to be sure that the layer of fascia on one side is not above that of the other. I do not think we can dispense with stitches running through and through everything if we would bring the wound firmly together and prevent pockets. The more surgery I do, the less I feel sure of asepsis, and, at any rate, we cannot afford to leave pockets anywhere for fluid to collect in. I prefer through-and-through sutures.

Dr. C. C. Frederick, of Buffalo.—I rise for the purpose of saying a few words with reference to the point made by both Dr. Cushing and Dr. Reed. I wish to take positive grounds against the use of buried animal sutures or buried silkworm-gut sutures. I operated on a patient a week ago yesterday upon whom I first operated last November, it being one of a series of twenty-five cases in which I had been trying the buried catgut suture in uniting the peritoneum, fascia, and muscle. My experience has been that at least fifty per cent. of them had sizeable collections of pus along the incision with abscesses that I had to drain and wash out for a period of one, two, or three weeks, sometimes longer, after operation. I operated on the patient referred to a week ago yesterday for ventral hernia, and on another one about three or four weeks ago. Out of this series of twenty-five cases I used catgut in peritoneum, fascia, and abdominal muscles, and to give extra support used also silkworm-gut *en masse*. I believe the less the tissues are bruised the less necrosis there will be, and the better the union the better the results of the surgeon. All my cases of herniæ so far have occurred in those where I used the buried animal suture.

I know the cause was not in the catgut. It was sterile, I am certain, for it was of the same lot from which I tied pedicles and arteries within the peritoneal cavity, and had it not been sterile I should have had evidence of it there.

DR. H. W. LONGYEAR, of Detroit.—I am specially interested in this subject. You will doubtless remember that I read a paper before this Association last year at Detroit on a similar subject. I was particularly interested in the remarks of Dr. Frederick, as he makes an admission which accounts for his bad results in the use of the buried suture. In the use of this suture one of the prime objects is to prevent infection after it has been inserted. In the first place, you must have both the wound and the suture aseptic, and then the wound must be kept aseptic, and this cannot be done by reinforcing the buried suture with an *en masse* suture. My first experience with this method began about four years ago. Dr. Carstens and myself have been working together in this line at the Harper Hospital with the buried animal suture since that time. We began its application in the same manner that Dr. Frederick says that he uses it, *i. e.*, by closing the skin with the *en masse* suture instead of finishing the coaptation of this structure with the buried lacing stitch. Neither did we then seal the wound with collodion. Our results were not perfect, but we learned to do better, and, by experimenting with it since then, have found that when it is properly buried and the wound sealed with collodion, without the application of any external sutures whatever, the results become nearly perfect, and this, in my opinion, is the only way to avoid suppuration and obtain satisfactory results. You cannot put in dead-animal material absolutely foreign to the tissues and permit a track into it from the outside, and expect it to remain aseptic.

DR. REED.—What are the relative results in cases of hernia in which Dr. Carstens fortifies the buried animal suture with the interrupted *en masse* suture?

DR. LONGYEAR.—Dr. Carstens did not say anything about fortifying the buried animal suture with the interrupted *external* suture. You must have misunderstood him. He does not do it, to my knowledge. He says he uses the silkworm-gut suture *buried*. He fortifies the buried tendon suture by the insertion of a buried silkworm-gut suture, and seals the wound with collodion just the same afterward. That is the point I wish to make in the use of the buried suture. You cannot use it with an *en masse* suture and get good results. I would a great deal rather use the *en masse* suture alone than to mix them up in this way. You carry in the staphylococci, streptococci, and other suppurative germs from the skin, which we know lie there. The great point is to avoid wounding the external layer of the skin with the needle. By using this suture you avoid it; neither do you carry in these germs, nor leave a track for them to gain entrance. For this reason also,

after inserting the last stitch, I make the suture fast in the wound and drop the cut end back, covering it with the edges of skin, and do not pass the needle through the skin and allow the cut end to retract.

Another point I wish to make that has not been sufficiently touched upon is this: Dr. Cushing spoke of the importance of bringing the fascia together and having it in accurate apposition. As far as that goes it is correct, but to retain it in its place is of as much importance as simply to bring it together. It must also be retained for a sufficient length of time to have it unite strongly. The whole wound of the abdomen must be strongly united. The fascia itself does not unite in eight or ten days as skin or peritoneum will. It takes from four to six weeks to unite, and you will find this statement to be correct if you carefully look into the matter. Therefore, when you put in an *en masse* suture, and take it out at the end of eight or ten days, the wound is almost sure to give more or less. There is weak union. You have hernia as a consequence. It is not the peritoneum or skin that you are relying on, but it is the *fascia*. You cannot get this firm union with an *en masse* suture by holding it for simply ten days.

I think some one spoke of catgut being a more dangerous suture to use than kangaroo tendon. I think it is a well-known fact that catgut is very much more difficult to make aseptic than kangaroo tendon. I formerly used catgut in my practice, and was not at all pleased with it. It would absorb too soon, and there was a tendency to the formation of abscesses; but I did not have them result to any great degree. I will say that in the use of the kangaroo tendon in a few cases I have had small superficial abscesses in the wound which discharged only a few drops of a watery-looking material, and that these healed very readily under the ordinary methods of keeping the parts aseptic for three or four days. Generally, I used peroxide of hydrogen, followed by some stimulating wash, and they have healed up in a short time, so that they were not half so much trouble as is usually experienced in ordinary cases of stitch abscess, which we see so frequently with the *en masse* suture.

Dr. Macdonald says that Dr. Vander Veer has about 5 per cent. of herniæ. My experience is that we cannot follow up all of our cases, and that hernia cases especially are liable to go to somebody else. You doubtless remember that last year I tried to obtain some statistics upon this subject, and with this end in view I wrote to twenty or thirty prominent operators both in this country and in Europe, and Dr. Joseph Price was the only one that tried to give me statistics. The other operators wrote me stating that they could not give me statistics, for the reason that they could not keep track of their patients. Dr.

Price gave me what he knew of his patients that staid by him, and the percentage of herniæ was about the same as Dr. Vander Veer's.

DR. MACDONALD.—How do you prepare your kangaroo tendon?

DR. LONGYEAR.—I do not prepare it myself; I get it from Dr. Marcy, of Boston. In our earlier experience Dr. Carstens and myself each had a little unpleasant experience in improperly preserving the kangaroo tendon, and discovered after using it that the suture had been contaminated in some way. That is one trouble we have to guard against in using it. You must be extremely careful to have everything pertaining to the operation aseptic if you are to get the best results. Strict attention to detail, accurate apposition of like structures, an aseptic suture in an aseptic wound that is held aseptic by sealing until Nature has closed all channels of entrance, will give perfect results with the buried suture, and produce an operation that is artistic as well as being the most useful for its purpose in preventing post-operative hernia.

DR. DONALD MACLEAN, of Detroit.—I am sorry, indeed, that I did not get here early enough this morning to hear Dr. Carstens's paper read; but I have listened with great interest and profit to the divergent opinions expressed on this very important question of the treatment of the abdominal incision, and my own conviction is, after all—and I have seen a great many different operators and have had some personal experience myself—that what is most essential is carefulness and cleanliness of the method. I do not believe there is such a fundamental difference between the two sides in this debate as there seems to be. I do not believe it matters very much which way or how the incision is closed, so long as the operation on the whole has been carefully, thoroughly, and skilfully done, and the wound likewise carefully and skilfully closed and kept clean. I operated for a great many years before I ever thought of closing the wound in layers, as is now so commonly done, by using the *en masse* suture. I have seen this suture used very extensively on both sides of the Atlantic, and, so far as I am able to judge, just as good results have been obtained in that way as by the other method, although the other method seems to possess some characteristics of precision and nicety, and perhaps there may be some anatomical arguments in favor of it—namely, bringing together in an accurate manner simultaneous tissues, so to speak, tendon to tendon, and fascia to fascia.

After all, I doubt very much if we could obtain really exhaustive and reliable statistics which would show a decided difference between the two methods. There is always danger in connection with the use

of the buried animal suture, no matter how careful one may be, and that danger is sepsis, more so than in the case of the other method. When the latter method was first introduced and applied, it struck me as being a very great improvement, and I was glad enough to adopt it; but from my own personal experience and from the observations that have been made today by the several speakers, it is to me questionable whether it is, after all, of so great importance as it has been considered to be. At all events, whether that is so or not, the fact remains that today there is an immense amount of abdominal surgery being done successfully all over the world, and my candid conviction is that, whether it is by one method or another, the steady evolution of this department of modern surgery must eventually give us better methods, and that with our lofty ideals of success the limit of scientific precision must be very nearly within our grasp. I hope to live long enough to witness its complete attainment.

DR. E. T. TAPPEY, of Detroit.—I have listened with a great deal of pleasure to this very interesting discussion, and I have had more or less experience with the different methods. My own preference is for the tier method of suturing. It strikes me as being a very much more exact and thorough method of closing the abdominal incision, and I have practised it for a number of years. I am not prepared to say, however, that I have not had abscesses following its use. I have sometimes been disappointed with the material we have been speaking of —namely, the kangaroo tendon, for I have found in one or two cases that the wound has been infected by it, at least I supposed it was the material that was at fault. I sent the specimen to Dr. Marcy, of whom I bought it, and he was very glad to receive it, and looked it over, but I have not heard just what he found to be the matter. I think we cannot be too careful in the use of this material. We must see that it is entirely clean. Lately I have boiled the material in alcohol, and afterward immersed it in a bichloride solution. I think, however, it is perhaps the most useful material we have, if we are only sure of its being aseptic and in a proper condition to use, for in the manipulation of this material it is certainly very much easier to use than catgut. You tie your knot, and you know that the knot does not slip, besides it is not the stiff, irritating material that the silkworm-gut is. I speak here of silkworm-gut only as a material for buried sutures.

DR. CARSTENS (closing the discussion).—I use the buried silkworm-gut suture in exceptional cases, where it is not apt to be broken down on account of vomiting. Like Dr. Reed, I am afraid of vomiting. But it is in cases where pregnancy may occur, producing a gradual distention of the abdomen, that we should use silkworm-gut, for if we use

either catgut or the kangaroo tendon I think the parts will gradually stretch, and the patient will not be liable to have either umbilical or ventral hernia after she becomes pregnant. If there is any liability to pregnancy, I do not use the buried silkworm-gut. I use it in exceptional cases only.

Speaking of pus, we will let this represent the incision (illustrating). If I had a very bad case of pus in which I thought there would be suppuration and I used a drainage-tube, I am afraid that I might get infection along the track of the drainage-tube, and in such a case I would use the buried suture from both sides up to about here (illustrating), and from this side up to here, and then, on each side, I would use one silkworm-gut suture, an *en masse* suture on each side of the drainage-tube, allowing the kangaroo tendon or catgut only to come up about the point you see, and be sure that it does not come in contact with the drainage-tube, so that no infection can take place. It seems to me reasonable that when you use the *en masse* suture, which you have to pull tight in order to bring the parts into apposition, you constrict the parts, causing them to die and slough; whereas, if I take but a little bit of the tissue and just sew it gently together with a little stitch, I do not constrict the tissues so much. The buried suture brings the parts into apposition; and when our patient is well she is not in danger of hernia in the future. I can show you any number of cases where I did not think of having such a thing as suppuration. Of course, I will admit that we have it once in a while, but I think it is largely due to carelessness. If we have a perfectly aseptic condition and perfect union, we will have no further trouble. I do not know what hernia is. I do not see any cases of it out of hundreds of operations that I have done. They will not average one per cent. of herniæ. The only cases in which I have had hernia were those in which I performed abdominal hysterectomy with the clamp method, and where I used the *en masse* suture. I do not do it any more. It is certainly a great deal more difficult to use and keep aseptic.

As Dr. Longyear says, you have the buried animal suture, then on the outside you reinforce it with the silkworm-gut suture, and then you take the ligature and cut it off, pull it through the wound, and the staphylococci which you find on the skin are pulled down, brought in contact with the suture, and as a result you have post-operative infection. You have abscesses a week or two after operation. What I desire to plead for is a more ideal method. I admit it is more difficult to keep the wound aseptic, but still we ought to try to have it so. That is what we should strive to do. Our success in abdominal surgery resolves itself simply into asepsis.

PLASTIC SURGERY IN GYNECOLOGY.

By JOSEPH PRICE, M.D.,
PHILADELPHIA.

THE practice of surgery in all its branches requires a mechanical trend and an ability to devise means to accomplish a given end. All surgery is a species of civil engineering. It is a means of overcoming deficiencies or derelictions in the animal mechanical economy. If nature has been faulty in her distribution of the raw material, surgery comes to her assistance and adjusts the mechanical balance of affairs, as in the club-foot, hypospadias, cleft palate, or wry-neck. If there has been an accident to the economy, surgery steps in with the engineering problem to be solved, what is to be removed and what is to be repaired, or what new means are to be found to regain a lost function or repair a damaged one. Now in all this it is evident that the mechanics of the part affected must be thoroughly understood before its repair can be accomplished, or intelligently undertaken. Once understood, a function may be imitated mechanically; artificial legs can run a bicycle or a foot race, and artificial hands accomplish many of the nicest manœuvres. Without such understanding all surgery, or indeed any mechanical process, is merely experimental and its results but tentative. Herein lies the fault and the failure of many of the mechanical and operative devices in the so-called improved methods of operations.

It requires no surgical genius to stitch a testicle in the inguinal canal in order to cure a hernia, or to perform some similar flighty trick that is novel and idiotic. But this is not surgery. The argument may be followed out indefinitely.

To do efficient plastic work in gynecology, a careful study of the anatomy and physiology of the parts injured and to be dealt with is necessary. Just as the scientific understanding of the mechanism of normal delivery has developed the scientific obstetrical forceps

under the name of "axis-traction," with the consequent diminution of the accidents of labor hitherto observed, so the study of the function of the parts often unavoidably damaged[1] renders their repair a matter of exact science modified only by the skill of the operator. The mechanism of perineal resistance and fracture is not a matter of chance, and the parts to be restored to function must be replaced in as nearly their physiological condition as possible. A heaping up of tissue here or a splitting there, although simulating a relay of opposing structure, does not necessarily mean strength, and it often happens that the advantage gained is apparent, not real.

Let me then insist that in order to mend a perineum intelligently the mechanism of labor must be understood and the lines of fracture appreciated. The perineum does not break haphazard, but always in well-defined lines, save under instrumental violence, and when tears are due to this cause they must be dealt with as lacerated wounds anywhere else. The anatomical fractures due simply to obstetric force and resistance must be mended in the lines in which they occur.

Looked at from this standpoint the multitude of operations devised for the repair of the perineum is strangely grotesque. In no other part of the body has so much been attempted with so little scientific knowledge, unless we except that fools' paradise, the abdomen. Operation after operation has been suggested, with this or that name attached to it, without a shadow of justification for existence in the scientific literature of the day. Unfortunately, however, a name often goes as great a distance in surgery as on a forged note, and the operation gains prestige not from its merit but from its introducer. It is not my intention to hold up any special operation to ridicule, but rather to insist that any operation having for its end the remedy of a mechanical deficiency shall have for its foundation a firm scientific principle, and not simply a plausible plea that it brings about a condition which *simulates* the normal. By this it should stand or fall, as it would at once disclose whether it be a really valuable procedure or merely a specious simulation. Without such criterion, it will be necessary to make a careful comparative study of the methods proposed. Meanwhile the younger operator is left floundering in the whirlpool of discussion and claims, while the unfortunate patient is suffering all the inconveni-

ences of experimental surgery. Here let it be formulated, that an operation or procedure justified by scientific deduction is never reprehensible; and that the merely experimental procedure should be frowned upon, unless the condition of the patient is so bad that any operation whatever must improve her, and be a relief.

Under the present abdominal régime of surgery perineal and plastic work bids fair to become a lost art. The general practitioner is led to look inside the abdomen for all the evils of a woman's flesh, while, too often, it lies in injury done to the bladder or perineum, or cervix during labor. Neglected cervical tears do much to render pelvic surgery necessary, while on the other hand indiscriminate *cervical* surgery often emphasizes previous *pelvic* disturbance and renders operative interference necessary. Hence will be seen the necessity carefully to discriminate between cases that operation will improve and cases that it will render worse.

In cases of serious pelvic invasion with accompanying lacerated cervix it is often better, or imperative, first to do the pelvic operation, and to follow this at another time with the cervical repair. I unhesitatingly condemn the plan advised by some to perform internal and external operations at one sitting. Surgery has not for its object the experimental determination of how much endurance the surgeon may possess, nor of how long the sufferer can stand anesthesia without collapse. That "enough is as good as a feast" is nowhere truer than in the surgery of gynecology. There is enough discomfort incident to the surgery of any one or two of the simpler procedures, without heaping upon this the pain and danger of an abdominal operation.

Apart from the growing discomforts of neglected perineal and cervical lacerations, it must be remembered that the existence of a damaged and defective perineal structure conduces to future difficult and sometimes dangerous labor by predisposing to failure of rotation of the head. In reference to injuries of the cervix, it is always to be remembered that serious laceration of this structure is frequently a cause of after-coming malignant disease, of sub-involution, sterility, congestion and the like, often putting the patient in a condition of chronic invalidism from pain, menorrhagia, dysmenorrhea, displacement, and mechanical derangements exhibited in relation with the bladder and rectum.

I have sufficiently dwelt upon the scientific and physiological

conditions calling for attention to the surgery of these parts, and have made plain from a scientific standpoint what the requirements of plastic gynecological surgery are. My own practice in this branch of surgery has been to test, as far as possible under the lines laid down, what has seemed to be an advance in the surgery already at command. I regret to say that in many instances my only conclusion has been that I have wasted time and done something my good sense should have forbidden, but after all the good may lie in this—that my own experience may be of use, as here, in suggesting what ought not to be done, teaching negatively by contrasting forbidden methods with others that have been uniformly successful and beneficial to the patients.

I have reminded you that perineal tears always occur at certain parts of the perineal structure. Without going into the anatomy of the parts or into a discussion of the reason for this fact, it is sufficient to remember, as each one of us with a practical experience must, that these tears are either lateral, under the ramus of the pubes, or central, extending from the vagina toward the rectum. The tears toward the rectum tend to run around it rather than through it, owing to the differentiation of structure in these two tubes. Now, it is to be remembered that the tears of the vagina are always from within outward, from above downward, and that therefore the external or skin operations for perineal lacerations are essentially non-scientific procedures. All operations for the restoring of the integrity of these parts should be done in the lines of their destruction, and *therefore from within outward and from above downward.* When the skin of the perineum is involved mending of this is merely a cosmetic procedure. The cosmetic element too often predominates in many of the so-called perineal devices.

In examining a perineum to determine whether it has been ruptured or not, a mere ocular inspection will not answer. A central tear is almost always visible. Not so a lateral sub-ramic laceration. To detect this, the finger should be introduced into the vagina, when the laceration will be detected by the fissure caused by the separation of tissue on one or both sides. The early, prompt, and, if possible, the immediate repair of these tears is vital—under surgical rules applicable elsewhere in the body. If the patient happens to be too ill or too weak to endure surgical interfer-

ence, operation is not to be insisted upon. Discretion is to be used here as elsewhere in deciding cases.

The silkworm-gut with shot is by far the most preferable material to be used for sutures. As little tissue as possible is to be included within the ligature, and strangulation is to be avoided. Early operation precludes the necessity for clipping away even the minutest bit of tissue, and the parts are usually very prompt to heal. When the sphincter ani has been involved, care must be taken to bring the ends of the muscle into apposition. To accomplish this a special stitich is necessary which I shall demonstrate in the discussion. So far as the method is concerned, it is evident to you all that the one suggested is that of Emmet. His procedure stands pre-eminent among the scientific suggestions and methods of modern gynecology. Its logic is unassailable, and its results cannot be fairly challenged. His work is as delicately true and accurate as an Italian mosaic, while his technique is so simple that to follow it needs only commonplace attention. His demonstration of the scientific value of his method is as accurate as that of any mathematical proposition, and criticism of the ends obtained, or of the method pursued, arises either from ignorance or misunderstanding.

In old tears the method and lines of denudation, as indicated in Emmet's own book, are unfortunately obscure. This fact I believe in a measure explains the reason of the operations having so long been questioned, criticised, and misunderstood.

DISCUSSION.

Dr. E. W. Cushing, of Boston.—Mr. President: I have tried almost every kind of operation for repair of the perineum. I was very much struck with the Tait method and buried suture when introduced, but gave them up for the same reason that I did abdominal suturing by layers. After all, as we adopt different methods and modify them to suit the cases as they come to us, these methods all run into much the same channel, and that is the method of Martin and that of Emmet. The method of Martin does not look like that of Emmet when you start it, but the two methods run together. The best part of the work is to be done in the vagina. I would agree to operate on

a case for either the repair of the perineum, overstretching the muscles and sagging of the floor of the pelvis, without having a single stitch outside, leaving the skin of the perineum entirely unsewed, and yet the woman would be well. In some of these operations a great many stitches are put in that will do no good in holding up the woman's uterus.

Where there is a laceration of the perineum at labor I advocate immediate operation. I would do it before the delivery of the placenta. Where the woman is profoundly under anesthesia, lying comfortably across the bed, before the placenta comes down, it is a good time to put in your sutures and repair the perineum. By the time the placenta is ready to be delivered everything is done.

I do not think we shall improve very much on the principles of Martin's or Emmet's operation.

Dr. Herman E. Hayd, of Buffalo.—I have listened with a good deal of pleasure to this paper, coming as it did from such a man as Dr. Price, and with the experience he has had on this subject. To hear him read an apotheosis of Emmet as he did was not only a compliment to Emmet himself, but also a compliment to Dr. Price. There is no question that, of all the operations being done for the relief of perineal lacerations, no one method has been conceived or practised that brings about the results that the Emmet operation does. As Dr. Price has dealt with the mechanism in the production of perineal lacerations, so he has also given us a means of rectifying them. If the laceration takes place from above downward and then outward, it is absolutely necessary that these tissues should be picked up in the same way, in order to get a mechanical and thoroughly satisfactory result. Unfortunately, we may read the several text-books that are in existence in which this operation is beautifully described, yet I do not believe there is a man in this Association today who, after having read a description of the operation in the text-book, could do it as it ought to be done. If one has had the opportunity of witnessing men like Price and Emmet do the operation, he will never try to repair another perineum except by the Emmet procedure. It is the only means that will pick up the deep fascia. It is the only operation by which we can pick up redundant tissue, and the operation that will thoroughly restore the perineum so as not to create a pocket, such as the flap-splitting method or skin operations do.

I was impressed also with what Drs. Price and Cushing said with reference to the question of immediate repair of lacerated perineums. Although I believe it is a good practice to restore the perineum immediately when it is ruptured, I had such an unpleasant experience

four or five days ago that I have made up my mind that it is not always a practice that should be adopted. Of course, every rule has its exceptions. I believe union will take place just as satisfactorily six or eight hours after the laceration has been produced, when it can be sewn under conditions more favorable, if you have got good light and good assistants, and in all probability you will get a very satisfactory result. In this case of labor I had the other evening, a posterior occipital position, the child weighed ten and three-quarters pounds, the woman was small, and the labor was long and tedious. I delivered her carefully, and, as I thought, very well, yet I tore the perineum from the vulva to the sphincter. I immediately sewed the parts up, but, unfortunately, did not get union. The tissues commenced to slough and break down. I do not believe I did the operation as well as it could be done if I had had better light and better assistance. In a general way, all perineums should be sewed up at once when lacerated, but I am satisfied when the tear is extensive, goes through the sphincter, it is best to wait six or ten hours, when we will have assistance and all the necessary paraphernalia about us to do a first-class operation.

Dr. A. H. Cordier, of Kansas City.—I heartily indorse the position taken by the author in his paper. It is an operation that I do altogether in my perineal work. The essayist has said nothing about applying the material used in the operation, that is, silkworm-gut and shot. I wish to lay stress upon that portion of Dr. Price's paper in which he condemns multiple operations, especially where the perineum is invaded or involved after the vaginal work is completed. It increases the mortality. We have a certain class of operators in this country who will either remove the clitoris, or stretch the urethra, dilate the cervix, repair the lacerated perineum, dilate the anus, cut out all the normal pockets they can find, and then wind up with an abdominal operation. These multiple operations increase the mortality. The operation that Dr. Price has described—the Emmet operation—does the work of repairing the perineum more completely and thoroughly than any operation known to surgery. We have it illustrated in a patient under an anesthetic. If she vomits, the enormous rectocele which existed prior to the operation will not appear in sight; but in the flap-splitting operation, if you let the patient vomit, you will see the rectocele well in sight before the patient leaves the operating-table. That is a demonstration of the utility of Emmet's operation for repair of the perineum.

Dr. J. Henry Carstens, of Detroit.—While I agree in the main with the paper, there are one or two points that I must take exception

to. Dr. Price is too extreme in his views regarding multiple operations. I, for the life of me, cannot see why the operation for a lacerated cervix, which you can do in six or seven minutes, cannot be done, and then sew up the lacerated perineum. I do not believe in removing the clitoris, cleaning out the rectum, then operating on the abdomen, as has been mentioned by Dr. Cordier. I do not see why we cannot do a lacerated cervix operation, put in silkworm-gut sutures, which we can leave for six weeks, then sew up the perineum. When the silk is solid and firm, at the end of six weeks we can take out the silkworm-gut sutures from the cervix. I cannot see why a woman should be subjected to the danger of another administration of the anesthetic, and why she should be subjected to the expense of staying in the hospital three or four weeks longer, when we can do the operation in five or six minutes. We ought not to go to extremes, but it seems to me the operations for lacerated cervix and perineum can both be done at the same time, as a general rule. There are exceptions, however.

The other point I must object to is the method of suturing. I believe in the perineum you can do the same ideal operation that you do in the abdomen with the buried sutures to better advantage than you can with a big *en masse* stitch and shot; and not only that, the pain, tension of the parts, and suffering of the patient in doing an operation on the perineum with the *en masse* suture are intense in some cases. If you do it with the buried suture, the parts will unite, and the patient will never know that she has undergone an operation. Of course, at times, you may have suppuration; the operation may not be a success; but you presuppose in all of these cases that your wound, fingers, sutures, etc., are absolutely aseptic; and if they are, you will have ideal results.

Dr. William Warren Potter, of Buffalo.—A few years ago it was the custom in nearly all medical societies to discuss perineal operations in considerable detail, and I doubt not that this has been in times past one of the most thoroughly plowed and harrowed fields in gynecic surgery; but of late years it has nearly dropped out of society debates, and has likewise almost disappeared from the literature of medicine. We now rarely pick up a medical journal, a book, or a monograph on the subject of perineal operations; yet I take it to be an undisputed fact, fortified by the experience of every man who has done gynecological surgery to any extent, or who has had much experience in gynecological practice, that neglected lacerations of the perineum occurring during the puerperium lay the foundation for a large proportion of the work of the gynecic surgeon. This must be true, whether this statement is

applied to damage done in the immediate locality of the injury or to the remoter impairment that requires the work of pelvic and abdominal surgeons to restore. I think it is fitting that this subject should be revived. I think, therefore, it is a proper field for this Association at this meeting to attempt to cover.

When I received the title of this paper it pleased me as much as any one on the program, on account of the importance of the subject and the fact that it has been neglected of late. Again, it is not adequate simply to sew up a perineum after labor, as is commonly mentioned, but it must be properly sewn. It must be done in a thoroughly surgical manner; and with all respect to my friend Dr. Hayd, who related his case very modestly, and claimed much fault for himself on account of the method of his work—a case in which the parts were doubtless bruised, and probably paralyzed, in a bad condition to repair—careful surgery ought to yield good results even in such a desperate case as that. Therefore, without going into a discussion of the details of the subject at this time, I wish to accentuate the importance of taking up anew the question of perineal repair, and going over the ground again, to see if we cannot take some work out of the hands of the abdominal surgeon by doing good early work on the perineum—work such as the paper just read has outlined, and Emmet himself foreshadowed and told us how to do years ago—work which we have neglected, some of us, at least, either in thought or in act. Let it everywhere be taught that perineal operations, primary and secondary, must be most thoroughly performed with mechanical perfection in order to yield such surgical results as women expect and have a right to demand.

DR. CARSTENS.—I misunderstood the paper of Dr. Price in some respects. I understood him to say that he did not approve of doing a lacerated cervix operation shortly after it occurred. I stand corrected, and recall what I said about that part of it in my previous remarks.

DR. L. H. DUNNING, of Indianapolis.—I wish to speak on only one or two points. I am very sorry the author did not give us an exposition of his method of applying the stitch in cases of complete laceration. I think one of the most important questions with us is to obtain a means by which we can secure perfect results where we have complete laceration. It is a comparatively easy matter where we have only a partial laceration. If we have a laceration extending from the sphincter up the rectum an inch or two, it is a difficult matter to get good results. After employing Emmet's and Tait's method with varying success, I am now using stitches on the skin extending from below

upward from the lower angle of the denuded surface, and since adopting that method every case has been a success.

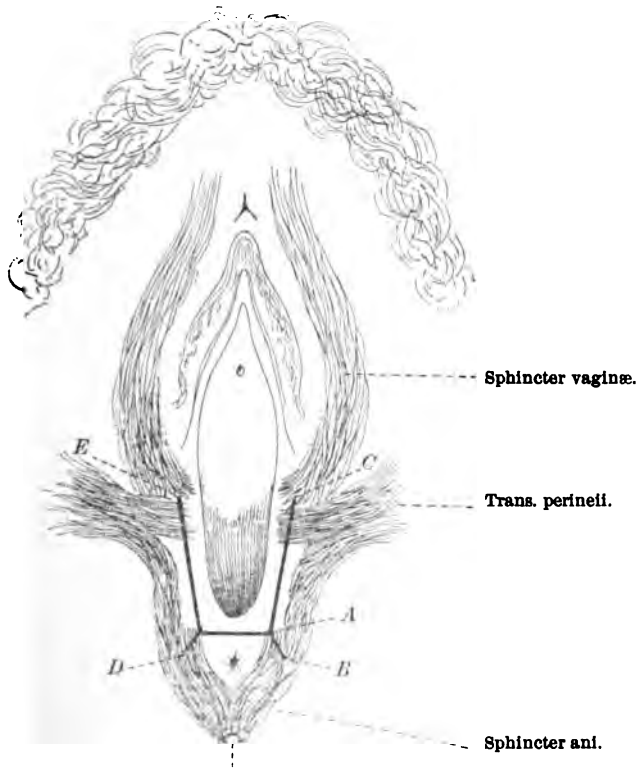
Again, I am very glad indeed that Dr. Price has turned his attention in this direction. Having studied his writings for a number of years, I have gained the impression that he was a leader of that class of surgeons who condemned uterine tinkering to such an extent that I have been led to believe that he did not consider lacerations of the cervix and perineum of any importance, and that some of us who were looking upon them as the source of great trouble were in error. I am glad to know that I have been working in the right direction for the last ten or fifteen years, and I shall be encouraged to continue.

I wish to call the attention of the Fellows to the use of Bozeman's speculum in recent perineal operations, as being admirable for exposing the field of operation. It is much better than Sims's speculum. Fritz speaks of it in his work. I have used it for ten or more years, and it gives us a command of the field of operation such as we can obtain in no other way.

Dr. H. W. Longyear, of Detroit.—I am very glad Dr. Price has brought the question of perineal operations before us, so that we can withdraw from the field of abdominal surgery for a short time and devote our attention to this important subject. The Emmet operation is a very successful and excellent method. I have used it considerably in the past, but for some time I have been using another method which, I believe, possesses some advantages over it, especially in the method of denudation. I think the method of denudation, whereby simply a layer of mucous membrane is removed, is not sufficient. When the muscle is torn asunder it retracts toward its origin, its stable point, wherever that may be. You have here the pubes, the ischii (illustrating), here the coccyx and anus, and here the sphincter ani and the transversus perineii muscles, with some fibres of the perineii running down this way and joining the sphincter. These muscles coming together in the centre unite with the sphincter vaginæ in forming the so-called perineal body. Now, when this is ruptured, these muscles retract toward the ischii and coccyx, resulting in a pulling apart of all this structure, and—a very important point—the retraction of the torn ends of the muscles back, under, and beyond the edges of the skin. As cicatrization occurs the muscles pull farther and farther back, the hollows resulting are filled with cicatricial tissue, and the new mucous membrane is thrown out over it all. You peel off the mucous membrane, making a superficial denudation, bring the parts together, and in nine cases out of ten you will not get the muscles united. You put in a suture that will last eight or ten days and you will have the same results as in an abdominal

incision. When strain comes it gives way and you have a skin perineum only. You should put in a suture that will last longer, as in an abdominal incision.

The method advocated by Dr. Price does really bring the parts together in a manner that is almost perfect, but I do not think even it gets at the bottom of it. You do not always get into the muscular structures. To uncover the muscles you must go behind some of them. I have used the Tait incision for that purpose, making, first, a



horizontal incision like this (A) (illustrating); then where rupture is complete, one from each end of this cut (B D) down on each side of the anus, to uncover the ends of the sphincter ani. (These two cuts are not made in cases of rupture of first and second degree.) An incision (E C) now passes up from each end of the initial cut (A) to the required height, as the scar will indicate. By this means the deep-lying retracted ends of muscles are reached where the superficial denudation would fail. You do not remove any tissue, but you leave this part to assist

in building up the perineum. You take hold of this upper flap, draw it up, and if you have found by previous examination that the tear has gone up into the vagina on either side, you dissect up the flap further and further. You do not make a superficial cut. You can in about five minutes pull the flap up and dissect it according to where the rent has gone. In this way you get at the levator ani muscle, which is often ruptured; you take hold of the ends and bring them together. You do not do that with a superficial cut. This is a point I wish to emphasize in this so-called split-flap operation. You may, perhaps, make the first cut superficially, but then dissect up where you wish.

When you get up to the highest point of rupture you take the kangaroo tendon, using small interrupted sutures with the Hagadorn needle, and build the perineum up as near as possible to where it was before it was ruptured. If the rupture is on one side, you often find the levator ani has been torn up high when you dissect up under the mucous membrane, and bring the muscle beneath accurately together with interrupted sutures. It takes longer to use an interrupted than a continuous suture, but I now use it in preference, as I consider it safer. I gradually bring the parts together until I have gotten near the surface, then stop and put in a lacing stitch and bring the edges of the skin and mucous membrane respectively together, and then seal the wound with collodion. The bunch of mucous membrane made by the upper flap all passes away and becomes smooth a few weeks after the operation, and you will hardly feel the puckered mucous membrane that is left. This (pointing to the illustration on the board) will be the lower end of the scar (B D in complete and A A in incomplete rupture), and this (C E) the top of it. The last stitch is a lacing stitch, which brings the edges accurately in apposition. Then you use a disinfectant vaginal douche, wash the wound with ether, and seal with collodion. In this way I get an ideal result. During the last year I have used the buried suture in all of my perineal operations. I have had only one or two cases where there was any suppuration, and these have yielded very readily to injections of peroxide of hydrogen, and so forth. By the method I have outlined on the board I can build up the perineum exactly as I want it, and my experience thus far demonstrates that the parts remain in the position in which they are placed.

DR. I. S. STONE, of Washington, D. C.—I have only a word to say in regard to the subject under discussion. I wish simply to differ a little from the essayist in some of the points brought out. I differ from him in regard to using the curette. I still use it, and I presume shall always do so. I cannot get along without it. In regard to the

operation for lacerated cervix, if you want to do an ideal operation, cleanse the uterus thoroughly, and you cannot do that very well without a curette. You can curette the uterus and repair the cervix and perineum in one operation.

Dr. Longyear has described in an admirable manner the operation of Mr. Tait, and I would not speak of this but for the fact that one gentleman after another who has occupied the floor has indorsed Dr. Price. We did not come here to indorse Dr. Price alone, but to bring out something new, something different. There are good points in all these operations. The operation described so well by Dr. Longyear is an excellent one when there is a tear of the sphincter. I succeeded with it in cases where Emmet's operation has failed, when the sphincter was torn. The flap-splitting operation has been successful in my hands, and I expect to continue to use it. Where we find a procedure that is satisfactory it is the one for us to use. I do not approve of any one operation being considered as the ideal one, not even Emmet's.

Dr. Frank A. Glasgow, of St. Louis.—I wish to call attention to one of the false teachings which is responsible for many cases of secondary operations on lacerated perinea. Dr. Price has given us a text only, and it includes a great deal. The teaching I refer to is that of all text-books—namely, that lacerated perinea should be sewed up immediately, or within a few hours; otherwise they should be allowed to go on for weeks or months until the patient has recovered, and then a secondary operation made. I hold that teaching as false. The sooner we do away with it the fewer secondary operations we will have. The general practitioner does not expect to have a lacerated perineum, still it will sometimes occur. The teaching in our text-books, that if we cannot sew up a lacerated perineum in twelve hours we should let it go, is certainly false, and I have long thought so. I think if we teach the general practitioner that these cases can be sewed up on the second or third day, or later (if not sooner practicable), we will have fewer secondary operations. The surfaces should be lightly curetted and thoroughly cleansed with peroxide and bichloride. The primary operation is not a difficult one, and it is not so difficult to bring the parts accurately together as in a secondary operation. We should promulgate such teaching as this.

The flap-splitting operation which has been referred to in the discussion is not a new thing to me. I have done this operation more or less for the last eight or ten years, and although it is called Tait's operation, it was done before Mr. Tait made it known. I learned this method from Dr. E. H. Gregory, of St. Louis. It has been very satisfactory in my hands.

In the matter of lacerated perinea, if we can avoid a secondary operation it will be a great boon to the patient, because there are other troubles that are directly caused by this condition. There is no doubt that quite frequently infection of the deep lymphatics takes place in that way. I have been called in consultation in a case where a patient lost her life simply from infection in this way.

Dr. W. E. B. Davis, of Birmingham, Ala.—I was pleased to hear Dr. Price on this subject, because we have all gotten to look for something from him on abdominal or pelvic surgery; so much so that recently when I, as Secretary of the Southern Surgical and Gynecological Association, announced the title of a paper from him on plastic operations, one of the members of the profession thought perhaps I had made a mistake. We frequently get a wrong idea of a man's methods from his discussions, because in his enthusiasm to impress a great principle of practice he says little about some of his work. So it is with Dr. Emmet, who, in his enthusiasm for plastic work, says very little about abdominal surgery in the field of gynecology.

In regard to the immediate operation for repair of the perineum, I may say that many failures occur because the operation is not done by the surgeon, but by men inexperienced in surgical work. In every case of obstetrics one should have his instruments at hand prepared to do a satisfactory operation on the perineum, if it should become necessary. He must expect to get a tear in a large proportion of cases, and he should repair very small tears. As Dr. Cushing has suggested, we can put in our sutures before the placenta is delivered, but I have always waited until its delivery before trying them. If we will do this, we will cause the patient but little pain and get good results.

The operations for the repair of the perineum known by other names accomplish about the same as the Emmet operation. There is not so much in the name of the operation, or any special way of doing it, as there is in the familiarity of the operator with the operation. Martin accomplishes practically the same thing, and so does Mr. Tait's operation, provided it is extended high into the vaginal sulci. The Emmet operation is an ideal one. It accomplishes what we desire, but it requires a great deal of time, and is more difficult to perform. There are many things in favor of the flap-splitting operation. You save tissue, you are enabled to go deeply down, and, whether you use the buried suture or the other, you accomplish very much the same as the Emmet operation. I think there are but few men who can use the buried suture successfully, and we ought to recommend that method of suturing which we can use most successfully in a large percentage

of our cases, and with which the large percentage of operators of average ability can attain success.

We can all indorse what Dr. Price has emphasized in his paper. It is a fact that we often prevent pelvic troubles by restoring lacerations of the perineum and cervix.

DR. JOSEPH HOFFMAN, of Philadelphia.—Just a word about the trouble which lacerated perineums are prone to cause. I think we all in our work meet with patients in whom we have great trouble in inducing any active interference after labor. A patient may say to you: "Doctor, I have suffered enough of late, and I do not want you to operate on me. Mrs. So-and-So was torn and got well, and I know I will get well." Such are the pleading and entreaties from this class of women which oftentimes lead us to neglect a part of our work which we ourselves know is just as essential, perhaps, as the use of the forceps which preceded the tear. In handling these cases, I take it always that when a man is introduced to the family for the purpose of midwifery he must have, to a great extent, the confidence of that family, and he should be careful not to be influenced by any of the members of the family. He should not be persuaded out of what he knows is his duty to his patient and himself. He should not be pursuaded out of doing what he thinks is right even by the entreaties of his own wife. I take it that there is no excuse which ought to obtain with medical men in being persuaded out of correcting any injury which they have done to the perineal tissues, and it is only necessary to make plain to your patient what will happen under thus and such circumstances. For instance, I have known a woman to go twenty years with a lacerated sphincter, unable to go out on the street except with great fear or danger. I have known women to go a year or two with holes in the bladder, so that they would have to wear a napkin all the time. If we can make these women understand the effect that will follow delayed cases of repair of the perineum, telling them that there will be a constant dribbling of urine, retention of feces, and other ills, I believe we will have their consent to do what we know ought to be done.

Reference has been made to promiscuous operations. It is rather remarkable how at times a man or set of men may be misunderstood. Speaking of the use of the curette, Dr. Stone possibly carries one in his pocket, ready to use it on every woman he meets. By this I do not wish to convey the idea that he is running around for an excuse to use it. If we find a carcinomatous uterus, we curette before we use a Goodell; but to say that every uterus needs curetting, or that there

is no danger in using the curette or sound previous to determining whether there is antecedent disease of the adnexa, is altogether an unsafe method of procedure. What we maintain is that instruments have their uses, and they also have their abuses in the non-intelligent use of them. In a large proportion of cases it is not necessary to use the curette, not even in the presence of a so-called adherent placenta. I think I may safely say that in not one case out of fifty of abortions do I use a curette, and I never, to my knowledge, have seen any serious effects follow by letting the uterus clear itself out. I hold that the mucous membrane of the uterus reproduces itself under these circumstances, and therefore it is not necessary in the great majority of cases to interfere with it. If there is a show of sepsis, of suppuration, or of anything that is going to militate against the safety of the patient, then it is time to use an instrument; but unless we find there is something of that sort the curette is useless. That is what Dr. Price has called "uterine tinkering."

The mending of the perineum and cervix is of paramount importance; but we should remember that stitching the cervix, so ably defended by Dr. Carstens, is oftentimes a most unnecessary procedure, for the simple reason that we have often seen after delivery the cervix extending clear to the vaginal wall outside of the introitus vaginæ, and would it not be the stupidest nonsense to amputate that cervix? Because we know that it will go back itself. It will shrink. A cervical tear may look half as long as your finger, but in five hours it will not be half that length, and in two weeks there will not be any tear at all. It will have all disappeared simply on account of the nature of the structure that is torn, and so putting in stitches in a cervical tear, without noticing and knowing where the tear goes, is a very uncertain and unnecessary step. There are some cases in which stitching of the cervix is of great importance. We have all seen strangely persistent hemorrhage after delivery. We have looked for it and could not find it. We do not know where it comes from. It is not intra-uterine. We do not see any tear in the perineal tissues to account for it, but it comes all the same. In those cases it is right to look for hemorrhage from the cervix. You have torn up into the cervical arteries, and that is where the hemorrhage is coming from. In such cases it is wise to clean out and sew up simply because you have hemorrhage.

Just a word about closing the sphincter by the flap-splitting operation. You may bring about continuity between the tissues, but I doubt very much whether you bring together the ends of the muscles. (Here Dr. Hoffman illustrated on the board his further remarks with reference to the flap-splitting operation.)

DR. W. B. DEWEES, of Salina, Kansas.—Three points occur to me while listening to the discussion. *First*, the paper is unique, being written by one of our most illustrious Fellows, and advocates an operation which will reward us with better and more complete success than any other yet devised, if correctly adopted. *Second*, in regard to the Emmet operation. I have seen a number of eminent men attempt to make the operation as Emmet teaches us and does it himself, but very few really do it as it should be done. The operation is purported to be the Emmet operation, but it is not so. The other point is with reference to stitches. I think from what observation and experience I have had, as a rule, bad results follow in these cases, aside from septic infection, on account of the stitches being drawn too tight—an important matter, which has not been brought out to-day, but is certainly worthy of our attention.

Another point is in regard to recent tears. I am certainly in favor of repairing the lacerated perineum early, and in doing so we should see that the stitches are not drawn too taut, for I believe the sloughing that follows in some cases is largely due to this one thing. I would ask all those who advocate non-interference in recent tears of the perineum: Would a surgeon be considered as having done his first duty who refused to stitch up immediately a mouth recently torn to the extent of one or two inches? All arguments to the contrary notwithstanding, it must be conceded as rational that, all things being duly considered, every woman is in a much better condition without a tear than with one. Then let us repair these tears at once, upon the principle: "If it were done, when 'tis done, then 'twere well it were done quickly."

DR. A. B. MILLER, of Syracuse, N. Y.—I desire to say but few words in connection with the operation under discussion. It occurs to me that the best name for this operation would be "restoration of the pelvic floor." Emmet's operation restores the deeper fascia, and in that way a body is got that will keep the uterus in place. My experience with the Tait operation is that it gives satisfactory results only at the time of operation and for a short period afterward. I have performed the operation a number of times. It is a nice operation for a clinic, inasmuch as it impresses the student, but for its lasting qualities we are deceived in the operation.

One other thought occurs to me. Many cases, where we find it necessary to restore the perineal body as a support to the uterus, are not cases following the parturient act. I have had cases in my practice where there has been no tear of the mucous membrane at all following

the parturient act, but there had been a loss of the perineal body through pressure-atrophy, and in consequence of that the mucous membrane has appreciably softened, and it would be impossible to restore this by operation.

DR. PRICE (closing the discussion).—There are too many women all over the country suffering from neglect, and I unhesitatingly say that neglected plastic work is responsible for it. I have asked several of my pupils to write papers while witnessing a large number of plastic operations, to call attention to the importance of them, dwell upon the numerous operations, and also show how much the results differ. I am glad Dr. Miller made the point of calling this operation one for "restoration of the pelvic floor." It is very appropriate. I have demonstrated time and again the incomplete and imperfect nature of the variety of operations for repair of the perineum. You can simply run a scissors through a plastic flap-splitting operation of more than one year's standing. For instance, the finger will disappear to that depth (illustrating) behind the flap-splitting procedure one or two years afterward. Run the scissors through it and provoke vomiting, and at the time you see a huge rectocele that will roll over the superficial skin. Then, after running the scissors down to this point (illustrating), you can introduce one finger without touching either wall of the vagina. If you give these points study, you will be convinced that the outside perineal operation is worthless. There is no operation which gives such unpleasant results. In injuries to the pelvic floor, whether due to forceps deliveries or to large heads, all the posterior structures are pushed up in advance of the large head, perhaps four inches in its least diameter. Rupture of the perineal fascia and muscles is one of the most serious discomforts that a woman can have. The symptoms are often distressing. The woman experiences a sensation of everything rolling out, of defecating through the vagina, so to speak.

Some years ago I operated after the methods of Freund, Hildebrand, Martin, and Schröder. I would do as many as three of these operations a day for repair of the perineum. I would do a Hildebrand today and a Freund the next day. I carefully studied all these different methods, and after going over the ground for a period of years, and then thoroughly studying Emmet's work again and again, I was convinced that there was nothing in surgery that would compare with the results of Emmet's work in plastic surgery. The older methods are very numerous. Most of them are outside operations on the perineum, and very little inside. Those of Freund, Hildebrand, and Boerhaave approximate Emmet's method. The old trefoil operation of Emmet was

practised for a long time and condemned as an imperfect procedure, and after practising it for a number of years Emmet himself abandoned it, yet it is a method which is practised more or less in this country today by some.

With regard to the buried suture, considerable has been said about it. I notice there are a number of enthusiastic men who favor the buried suture, and yet I know of cases of abscesses, sinuses, and suppuration that have occurred, and abdominal sections have been made for the removal of this material. You may say it is either the fault in the choice of material or a fault in the methods of the operator, but these unfortunate results are too common. Emmet has entirely changed his method. If you have not seen him operate in the last few years, you know but little about his work. He is a decidedly progressive man in plastic work.

With regard to loss of tissue, a certain amount of scar tissue should be sacrificed. Surely, most of you have seen malignancy in scar tissue in the perineum. I have seen a total absence of it, and yet I have seen, time and again, women die of malignant scar tissue in the perineum.

Dr. Cushing has alluded to the complete perineal operation before completing the third stage of labor. I do not agree to that at all, because we are not sure that the placenta is going to come away. Sometimes the placenta is strongly adherent, and it requires a great deal of care in introducing the hand not to injure the wound in the delivery of the placenta. The placental stretching in those soft and pliable structures will do mischief and defeat union. I would not practice closure of the lacerated perineum before delivery of the placenta.

Much has been said about Mr. Tait's method. In justice to Mr. Tait, he has never claimed it as his method. It remains an incomplete procedure at best, and no one has yet, who uses the buried or deep suture, ever restored the pelvic floor by the external or flap-splitting operation. I run a scissors through them every week, and I know what I am talking about.

DR. CUSHING.—I would like to ask Dr. Price how long since Emmet used the V-shaped incision?

DR. PRICE.—He has been using it for ten or fifteen years, and it is surprising how few of his pupils use it. (Here Dr. Price went to the blackboard and gave a complete demonstration of the method he pursued in operating on the lacerated perineum.)

I do not agree with Dr. Carstens in his advice to stitch up the cervix first, leave the sutures in a week or two, and then repair the perineum.

I think it is foolishness to anesthetize a patient for two operations of that character, when the whole thing can be done in thirty-five or forty minutes.

With reference to the curette, I will say that every uterus Dr. Stone finds is not dirty, but if the uterus is dirty it should be curetted.

DR. STONE.—That is all I claim, Doctor.

DR. PRICE (resuming).—Dr. Davis has spoken about how men differ in their methods, and also in their materials. I do not suppose I can reform this world with regard to silkworm-gut, but I know perfectly well that some men handle silk skilfully and successfully. I am very fond of silk myself, and I am satisfied with it. Silver wire, in the hands of Emmet, is better material than silkworm-gut. It acts as a splint. It immobilizes the tissues. If you know how to apply it, silkworm-gut is the next material in value as a splint. Our flexible materials do not immobilize tissues, and the results are therefore not so good. There is more danger of filth and contamination from other materials than from silver wire or silkworm-gut. There are few men who are satisfied with other men's materials or with their instruments. My pupils are never satisfied with my instruments. They modify them to suit their own ideas.

When these operations on the perineum are done twelve or fourteen hours after the injury I consider them secondary. I remember a discussion which took place in New York in which a prominent physician said the baby was crying, the grandmother was excited, and the husband a little agitated, and it was no time to do a perineal operation. So he threw down the bedclothing and left. What nonsense!

In regard to Dr. Hayd's case, I would say that if he had exercised proper care in the closure of the perineum he would have had a perfect result. I insist upon all primary tears being repaired before the bedclothing is thrown down. It is only necessary to pull the patient to the edge of the bed and drop down on your knee occasionally, using the material that you should carry with you. Deliver the placenta and close the tear. If it is in the night, do not delay the repair of the injury because you have no assistants, because it will be the means of having the surgical world laugh at us. Every general hospital resident stitches scalp wounds all the night through.

Gentlemen, I thank you for this full and complete discussion you have given my paper, as I consider it without precedence in the history of gynecology in the last ten years.

THE CARE OF PREGNANT WOMEN.

By WILLIAM B. DEWEES, M.D.,
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It is a stirring conviction with many reputable, earnest, and progressive obstetricians that the time has come when we must disclose our power to the world by increasing the usefulness of our labors, and begin to use it for the prevention, as well as for the alleviation, of the suffering of pregnant women, as has not yet been done, or else get out of the way. In such an event deliverance will come to this class of suffering women from another source, but woe to those of us who are found at ease with the assumption of this responsibility. The responsibility is tremendous, but the obstetrician cannot evade it. He may selfishly shirk it; but it is absolutely out of his province to shift it. That it is our most sacred duty to purpose awakening the profession by arousing one another until each and every member is fully astir in the line of progression—the indifference to which is the greatest hindrance the medical profession has to contend with today—is the writer's hope and belief. The specialist just now is being put to the sharpest test ever known in his history. Whether we as obstetricians will endure it, and turn about to accept it as the greatest opportunity the centuries have brought to us, depends upon our readiness to hear and heed the voice of Nature, so very clear and distinct today. These are matters of great importance to us, and this is a meet place and time to bring them to notice and to consider them. No one can read, listen, and observe with intelligence now, and not feel that we are living in one of the most marvelous, and, for the true-hearted, progressive practitioners, one of the most responsible epochs the world has ever known. That the medical profession is not fully awake to the needs of the hour, as she should be, is sadly true. Far be it from me to depreciate in the least

degree the noble work done and the glorious advances made by our profession for human physical betterment. She is unmatched by all other organizations combined in this respect. But it must be remembered that she should be. It is just this that gives significance to the contrast between what she has done and should have done. She has need to be taught again her first duty: to preserve the human body sound, which be the first principles of the oracles of God.

Let us recall the three great and noble objects of medical science, namely: 1, to preserve health; 2, to allay suffering; and, 3, to banish disease. The more immediate duties of the obstetrician are to preserve life, to mitigate pain, and to expel disease amidst the natural or accidental difficulties to which pregnant and parturient women are constantly exposed. The study of the diseases and difficulties encountered with a state of pregnancy and parturition, though highly interesting, and having at all times attracted the greatest attention of physicians, is, however, exceedingly difficult. This circumstance probably atones for the fact that our obstetrical literature still continues to be full of errors. By consulting the best practical writers, missionaries, and travelers, the revelation comes that it is among the higher classes in the most civilized countries—Europe and North America—that women suffer the greater in both pregnancy and parturition; but that the women of the peasantry and the savage are comparatively exempt. We may therefore very naturally and wisely conclude that it is unnatural for civilized woman to suffer so universally as she does today, and that civilization, in disobedience to the law of Nature, is the true cause of her present suffering during gestation and childbirth. Thus we may

> "Find out the cause of this effect,
> Or rather say the cause of this defect,
> For this effect defective comes by cause."

It is ignorance, as well as carelessness and viciousness, that has brought about the existing abnormal condition of the civilized woman.

Thus, through unwholesome civilization have come fixed habits of excesses; and if excesses must be indulged, evil consequences will follow and must be endured; for Nature's law would have to

be changed before they could be either prevented or banished by any method of treatment. It follows then, as a natural consequence, that to prevent these sufferings will depend, not so much on treatment by application or administration of therapeutic agents, as on the successful education and training of these women so they will learn to know how to—and will actually—cultivate the necessary self-discipline requisite to enable them to prevent the continuous irritation from excesses in their modes and habits of life. If the writer's observations have been correct and unprejudiced, it seems that a revival of learning in obstetric science must needs be instituted among us, destined to find the true cause or causes of the unnatural and needless suffering of civilized women.

The progress of obstetrics in the immediate future must be made through the knowledge that will be wrought out by the devotees of biology. Thus, we shall find our way, on positive ground, back through the morphology of the organs, tissues, cells, and blood, to a clear comprehension of the origin of vital activity in protoplasm and the pabulum which sustains it. This is the only way open for us into the primitive arcana of Nature if we would have the wisdom essential to inculcate intelligently that regimen which will successfully prevent the needless sufferings of pregnant and parturient women. (The future distinction of obstetric science can obtain only by an advanced study of human biology. When this truth is propounded there opens before the thinking mind a vista so transcending all ordinary limitations of obstetrical knowledge, that requires such genius and expansion of the mental eye in order to embrace it in its simplicity, as scarce yet obtains.) It remains then for our guild to endeavor, by rigid scientific investigation through advanced biologic studies, to make patent the causes of the sufferings of pregnant and parturient women, and to determine exact measures for emasculating those causes or for neutralizing their effects whenever they have eluded detection or escaped emasculation.

Thus by directing our studies chiefly in relation to etiology and diagnosis, and, having learned to know the true cause, it will become easy intelligently to establish prevention; while, with a correct diagnosis, treatment will become easy.

I verily believe that the next coming great advance in this our special branch of medical science will be in our bringing home to the general practitioner the fact that the diseases peculiar to women

during pregnancy and parturition are very largely preventable; to make him feel his responsibility both as to their production after the present generally prevailing methods of practice and also as to the possibilities of their prevention after improved methods. The family physician must be fully aroused to the conscious realization of the fact that it lies within his power very largely to prevent many of the diseases among the women of the families intrusted to his care. When this obtains his moral obligation will compel him promptly to do his full duty, by giving adequate instructions concerning the ill effects of improper posture, dress, food, drink, and erroneous habits of living, including the non-forbearance of indiscriminate, excessive, and impure sensual indulgences. Then it will come to pass that the wholesome forbearance of coitus during the entire period of gestation, the puerperium, and three months thereafter, will be insisted upon, together with correct posturing and dressing, proper food and drink, and healthful habits of living.

Aseptic accouchements will be faithfully and efficiently practised; lacerations of the cervix and perineum will be more frequently prevented, and when they do unavoidably occur, will be early repaired; rectal and vesical troubles will be corrected in due season; gonorrhea and syphilis will be also more frequently prevented, and when encountered will be more vigorously treated and kept under surveillance until all discharge and sequelæ are arrested. And, what will be of far greater benefit to mankind, is that there will be given the requisite attention to the growing girls, with special care about the years of puberty, that more vigorous bodies and more normal reproductive organs be developed. A positive, clear, and convincing protest will be made against the present unwholesome state of society which is now urging our girls on to a degree of emasculated physical corruption by luxurious indolence, deleterious dress, and sensual excess, that superbly fits them to live in communities by themselves —in women's hotels—whereby they become ruined for wifely companionship and sturdy maternity. When that day comes—as I verily believe it to be within the province of our intelligence to inculcate successfully—then, and not until then, may we hope to find that the prevalence of diseases among civilized women will cease to be a reproach to preventive medicine. Then will authors and teachers find it necessary to discontinue defining woman as "an animal with a constipated bowel and pain in her side."

But, as yet, at present we are compelled to meet the situation as we find it. The condition of the suffering of the civilized women of the present generation, however grossly unnatural it has been cultivated, must needs have our most careful attention and require our wisest judgment, lest we fail to institute proper treatment for their relief. In the care of pregnant women much of great importance devolves upon the obstetrician with regard to conducting the mother safely through the period of gestation, parturition, and the puerperium; the preservation of the life and healthful condition of the child—and his own reputation.

The diseases of pregnancy unquestionably are a field only partially and imperfectly explored. When we take into consideration how much of accidents might be avoided, and how much real good done to this class of suffering women by proper care, it places us at a loss to account for the fact that obstetricians have hitherto neglected their duties by signally manifesting a want of endeavor to promote the advance of obstetric science in a direction quite worthy of the profoundest investigation. It is a noteworthy fact that the conditions which beget the disorders of pregnancy are not thoroughly treated by any of the standard works upon obstetrics. We are so busy thinking, discussing, defending, inquiring, practising, and teaching about the better modes of alleviating human suffering, that we have no time and no leisure of mind for quiet contemplation, without which it is impossible to obtain a clear knowledge of the real causes and how successfully to prevent them. Communion with Nature was never more needful than now. Feverish activity rules all spheres of life. Medical effort is multiplied and systematized beyond all precedent. And all of these things make calm fellowship with Nature hard to compass. We can conquer Nature only by obeying her laws, and in order to obey those laws we must first learn what they are.

For the convenience of our consideration the paramount duties of the obstetrician in the study and care of pregnant women may be classified as follows:

1. To discover if the patient be actually pregnant.

2. To determine positively if the impregnation be uterine or normal, as contra-distinguished from tubal, abdominal, or abnormal pregnancy.

3. To note carefully the pregnant woman's history, including her

age, primiparity or multiparity, environments, station in life, general condition of health, period of gestation, as well as her dress, food, drink, and habits of life; to make repeated examinations of the urine and ascertain the temperature from the time pregnancy is established to the termination of gestation.

4. To make a physical examination for the purpose of accurately determining the diameters of the pelvic straits; the symmetry and size of the bony outlet; the integrity, condition and position of the vagina, uterus, and other interpelvic viscera and adjacent structures; the state of the abdominal muscles; the presence or absence of hernia, varicose veins, and tumors; the shape, size, and condition of the breasts and nipples; the condition of the heart, lungs, mind, stomach, and bowels.

5. To observe the state of the fetus, its strength and viability, as well as the implantation of the placenta.

These must all be included in the search for intelligent guidance as to how the proper management of the pregnant woman should be conducted. With regard to the first, all experienced observers have found that psychological phenomena often call for an intimate study and wise differentiation of every form of hallucination, delusion, illusion, as well as the delirium of cerebral hyperemia, or the frenzy of the maniac, from toxemia and eccentric irritabilities, and that such abnormal conditions frequently exist unrecognized, and so continue until they eventually establish their peculiar fixed impress upon the mind and nervous system. Thus, when the paranoiac woman simulated pregnancy, and even parturition, she deceived the better judgment of some of the most skilled obstetricians. Pseudocyesis and pseudotocia are recognized abnormal conditions which so closely resemble the normal condition of pregnancy and the beginning of parturition as to demand our highest discriminative faculties in arriving at an intelligently correct diagnosis.

As to the second, it remains a simple self-evident fact that it should always be positively determined whether the impregnation be uterine or extra-uterine. How intelligently to differentiate normal or uterine from abdominal pregnancy, time forbids to discuss fully in this connection, sufficing to say that it may be made by careful palpation of the abdominal parietes, together with vaginal and rectal digital examination and proper posturing. Paracyesis and interstitial or cornuate fetation are purposely omitted, as such

accidents can scarcely be diagnosticated at a sufficiently early period of gestation to be of actual benefit. Abnormal implantation of the fetus constitutes a most important class of cases with which the accoucheur has to contend. Extra-uterine or tubal pregnancy is rarely suspected until after certain dangerous and distinct symptoms are manifested, chiefly because no opportunity is had to discover it. These symptoms are such as follow rupture of the cyst containing the embryo, with intrapelvic, interperitoneal hemorrhage and shock, as sudden seizure of violent agonizing pain in the lower abdomen, fainting, pale or anemic surface of the body, cold, clammy skin, rapid and almost imperceptible pulse, and sighing respiration. Whenever extra-uterine fetation is discovered, either before or after rupture of the cyst, the question of treatment is a very grave one. But, experience teaches that this truly marvelous and murderous condition admits of only one line of action to be followed with any degree of ultimate safety to the life of the pregnant woman. Section must be done. No other line of treatment that has been advanced is so rational and certain in the ultimate saving of life as abdominal section. The perfected technique as we have it today makes it a safe procedure. We must, however, bear in mind what experience also teaches us—namely, that when the placenta is found still in the tubal sac it is best to enucleate and remove all—the tubal sac and ovary; but that whenever the placenta is found partially or wholly out of the tubal sac and adherent to the peritoneum, bowel, etc., and still alive, the very best that can be done is to let it alone, to leave hands off. In these cases the ultimate safety of the patient lies in removal of the fetus, cleaning out of the peritoneum of blood clots and all other débris, ligating the bleeding vessels, packing with iodoform gauze, and treating as an open wound, thus allowing the placenta to come away in due course of time by suppuration. We can thus guard against sepsis by drainage, and cleanse out the cavity as fast as putrescence develops. My distinguished friend and classmate at the University of Pennsylvania, Dr. Joseph Price, than whose experience in these cases there is none more extended and successful, and consequently deserves to be accepted as reliable authority, says: "All other lines of treatment that have been advocated fall into insignificance with this manner of managing these cases." He also claims this as a summer disease or accident, being in his experience almost always found only during

the summer months; when May comes he looks for extra-uterine pregnancy cases.

The third brings us to consider thoughtfully the influences of those conditions which have been hitherto so grossly neglected, but which demand a decided and determined prophylaxis. The unprecedented rapid progress of civilization in disobedience to the law of Nature, as evidenced by the accumulation of wealth on one hand and extreme poverty on the other; the forcing or cramming system of intellectual education, with lack of requisite physical training; custom of unwholesome food and drink; deteriorating fashions of dress and habits of society; unbridled sensual indulgences; and the woful endeavor to equalize the duties of women with those of men, have within the last generation very much deteriorated the childbearing capacity of civilized women. True, the standard of female beauty is increasing, and decided intellectual growth is manifested by woman in all departments of science and art; but, in the same ratio, do we find the remote dangers as well as the immediate accidents of gestation and childbirth have increased. Hence we find that flaccidity of the abdominal, spinal, and pelvic supports; chronicity of the shattered exotic nervous systems; abnormal state of the ovaries; subinvolution of the uterus, etc., have marvellously increased in later years, notwithstanding the much-vaunted so-called hygienic advances in improved habits of living and reform in dress. These unnatural conditions are most prevalent among the residents of our cities, and increase from bad to worse as we go from the smaller to the larger and more crowded marts in civilization. They are as prolific sources of chlorosis, anemia, trophic nerve paresis, hydremia, hyperemia, and prostration during pregnancy among the women of wealth, ultra-refinement, and excessive culture, as are those women who are subjected to the privations and hardships of extreme poverty: the remarkable fact in history being that there has been a proportionate increase of these conditions among the women of these two extremes of life; whereas the reverse holds good with the women who belong to a middle class and are comparatively free from the unnatural behests of modern civilized society or of irremediable poverty. The pregnant woman whose parentage as well as herself has been untrammeled with the deleterious impress of either of these two extremes in life will terminate her gestation and parturition with much less suffering, and

more healthfully to herself and her offspring, than will her more unfortunate sister who comes from a stock reared in the excesses of indolence, luxury or poverty. The pregnancies of too early, as well as of too late, marriages are alike to be apprehended as fraught with unnatural conditions. The girl who enters the matrimonial state at the nubile period, from eighteen to twenty years of age, will approach the marriage couch with a much better prospect of wholesome fruition, healthy to herself and offspring, than will she who enters the nuptial relationship earlier, under the turbulence of puberty, immature physical development, and ill-formulated *morale* amid the storm-waves of exalted nerve tensions superinduced by over-taxed educational training and undue stress of unwholesome fashion and society; or than she who marries late, say after twenty-eight years of age, who still retains all the productive elements but which have been debilitated by repeated disappointments, now leave her with the elasticity and resiliency of youth—the regulating factors in all growths—defective, and the newly-stimulated energies of a life somewhat wasted are revived in a physical organism unfitted for the reproductive process. The ovaries and uterus may properly perform their respective normal functions from puberty to the menopause, but it must be remembered that an opportune impregnation is requisite to preserve woman, if not rosy and plump, at least elastic and buoyant, that her maternity may not be exempt from pelvic indolence, so typically manifested by the flattened chest, the wrinkled face, and some fixed cultivated hobby —to save the rosy-cheeked maiden of twenty from shrivelling into the parchment-skinned spinster of forty, by timely desuetude of celibacy. The primiparity or multiparity of the patient also demands its quota of consideration in the etiology of the diseases of pregnancy. The influences of heritage, personal habits, station in life, and environments, usually make up the requisite field for consideration in the primipara; whereas, in the multipara we find it essential also to look well after such conditions as sub-involution of the uterus, lacerations of the cervix or perineum, tumors, and defective pelvic, abdominal, and spinal supports, as they often lead to abortion or to direct dangers during parturition.

The thoughtful obstetrician will, with inexorable discipline, advise his patient as to the requisite *régime*. The consciousness of his full duty will impel him to insist upon:

1. Absolute, regular hours and wholesome environment.

2. Plain but nutritious and wholesome food and drink, being mainly composed of fresh lean meats, fresh fruits, pure milk, and distilled water.

3. A proper amount of exercise, by walking or light labor on foot and maintaining the correct erect posture. Whenever infirmity forbids such exercise, recourse should be had to massage, and as much time passed in the open air as is advisable under such unfortunate circumstances; rest in the recumbent posture after meals and fatiguing efforts, with not less than ten hours sleep out of every twenty-four.

4. An open condition of the bowels and skin, which is to be chiefly maintained by proper diet, exercise and bathing, the wearing of flannels, warm low-heeled shoes and loose garments, and, in rare cases, the proper use of laxatives and hot water enemas.

It, however, not infrequently falls to our lot to have placed under our care pregnant women who belong to the poorer and less favored class, shunned, and exposed to too much labor, privation of proper food, dress, and shelter, with whom we find ourselves confronted with the question for bettering their diet, dress and habitation, which assumes such proportions that demand our assistance, not only as medical men, but also as philanthropists. Fortunately the advantages which the many charities afford enable us to give this class much benefit in every way, save when mental anguish and nostalgia become irremediable factors in the production of depressing influences which bar healthful action of resources at our command. With regard to repeated examinations of the urine and noting the temperature, it suffices to say, that, as the urine and temperature, so are very largely the prognosis and treatment prior to parturition. Urinalysis and thermometry are simple in detail, yet how prolific in averting the culmination of conditions very hazardous to both mother and child—conditions which otherwise are frequently discovered only by the appearance of anasarca of the inferior extremities, edema of the face or lungs, or a seizure of eclampsia, after which attention is given to these searching steps, but often too late to be of any value in devising a prophylaxis. This very naturally raises the question, is there a prophylaxis for the toxemia found in connection with the albuminuria of parenchymatous nephritis, diabetes, etc., prior to or during parturition? The experience of an earnest, rational endeavor in a limited number

of cases warrants the opinion that very much may be done in this direction. So, also, with regard to the prophylaxis of parturial sepsis, which is a problem of equal magnitude. True, sporadic cases of so-called puerperal fever (parturial sepsis) as well as of eclampsia, etc., may ensue in spite of all possible efforts; but it is the writer's firm conviction that these murderous complications can and will be prevented by timely precaution and by banishing every factor in their production. Preparatory hygienic regulations, asepsis, and quarantining will as surely save the mothers from these complications as absolute cleanliness at parturition will save the child from ophthalmia neonatorum. In proof of this it is needless to confine reference to personal experience in private practice, for in addition we find that the maternities likewise furnish abundant evidence in support of this declaration. Here we may cite, as the most striking example, the indefatigable labors of our eminent Fellow, Dr. Joseph Price, in his connection with the Preston Retreat, at Philadelphia, whereby both that institution and himself have become renowned, in establishing the fact beyond all doubt or cavil, that these complications can be prevented.

A word with regard to the term puerperal fever, which is misleading and fails to express the condition it is intended to imply. It should therefore be expunged from our literature and be replaced by the proper term, parturial [from the Lat. *parturire, parturitum*, itself from *parere*, to "bring forth"] sepsis. Parturial sepsis is a surgical sepsis arising from the conditions in which women are found during the extrusion of the uterine contents, similar to those during surgical procedures. The same classes of septic infection and septic poisoning occur in the non-pregnant state, during operations upon the pelvic viscera done without due regard to absolute cleanliness, and in hospitals where patients are crowded together with want of proper sanitation. Facts, as numerous as can be collected in any department of medicine, prove conclusively that the infection and contagion of sepsis, non-specific and variable as they are, can be conveyed by the nurse as well as by the accoucheur, and thus may likewise poison patient after patient until she also, as well as the accoucheur, either discontinues her labors or subjects herself to the most rigid discipline of absolute cleanliness and sanitary environment. When this prophylaxis obtains then will parturial blood poisoning cease to be among the cases intrusted to physicians, and they will find themselves rewarded with a mortality

of *nil* from sepsis. It is very clear to the writer that the more carefully we study and practise obstetrics on sound surgical principles, the better success will we obtain. This, above all else, will secure a thorough preparation of the vagina, that the child may make its exit into the world through a clean channel, which will insure safety to both mother and child. And, again, if the forceps or the hand should be required, if laceration of the cervix or perineum should occur, the patient will then have the healthful benefit of the same preparation as is given for surgical procedure. A word also with regard to finding ourselves summoned during the latter period of pregnancy, or at the approach of parturition, to attend one who is suffering from or threatened with eclampsia, and the case being a plethoric subject, suffering chiefly from vascular excitement, I should feel it as much my duty to bleed, as I should to clean out the endometrium whenever parturial sepsis was found to be due to the retention of infected decomposing portions of the secundines. While, if the patient under like condition belonged to the more rare class of anemic cases, suffering chiefly from muscular excitement, I should hope happily to correct the disorder by chloroformation, hot water, the hypodermatic use of morphine and atropine, veratum viride, and the like.

Under the fourth head of the subdivision of this subject it may be remarked that pelvimetry is an equal essential requisite with urinalysis and thermometry. Deviations from the normal symmetrical pelvis, the diameters of the pelvic straits, and the inclination of the bony excavation exercise marked influence in proportion to the degree that they exist.

In an abnormally broad, capacious pelvis, with obliquity lessened and supports relaxed, we find that in the earlier period of gestation the tendency is to misplacement of the gravid uterus either forward or backward and downward, from gravitation in consequence of increased weight. These abnormal uterine positions are usually manifested early by bladder or rectal difficulties, with bearing down or pressure in the pelvis, and a dragging sensation from the lumbo-sacral region. The functions of the intrapelvic nerves, bloodvessels, and lymphatics being interfered with, we find in a proportionate degree that there is produced a stasis in the venous, vaginal, uterine, and rectal plexuses, and consequent dilatation of both these vessels and the lymphatics. Thus we have produced a

hyperemic state of the entire pelvic circulation, resulting in edema primarily, followed by ecchymoma of the perivascular, perilymphatic, and other cellular tissues, to be succeeded later by varix of the vulval, vaginal, uterine, and hemorrhoidal venous plexuses, and consequent trophic nerve changes. It is a noteworthy fact that in these cases there is almost invariably found to be a want of the correct erect posture. The woman herself unconsciously increases the aforesaid difficulties by assuming a more or less stooping posture in her endeavor to make herself comfortable from the dragging sensation below. Thus we find the abdominal and spinal muscles relaxed, the lumbo-sacral spine receding behind its normal axis—perpendicular with ear, shoulder, hip, and ankle—the weight of the superior trunk gravitating back of this normal axis and falling perpendicularly behind the heads of the femurs; whereby the pelvis is swung upon the femur heads from an oblique to a more or less transverse position, while the superincumbent weight of the abdominal and thoracic viscera, instead of being directed forward by the normally advancing lumbo-sacral spine and supported upon the pubes and lower portion of the abdominal muscles, now falls directly within the basin of the pelvis, exerting its injurious effect upon the contents thereof. The real causes of these conditions being thus clearly revealed, the treatment becomes very simple. This consists in first re-establishing and maintaining the correct erect posture, thereby securing the normal obliquity of the pelvis by advancing the lumbo-sacral spine in its normal axis of the body. The superincumbent weight of the abdominal and thoracic viscera is then directed to gravitate normally upon the pubes and lower border of the abdominal muscles, and at the same time there is afforded the normal shelter to the pelvic contents below and behind the promontory of the sacrum. Experience has established the fact that the correct erect posture in these cases is secured and maintained the better and easier by virtue of proper external support. The external support which fulfils this purpose the better is one fully detailed by the writer in a paper read before the International Periodical Congress of Gynecology and Obstetrics, at Brussels, Belgium, September, 1892, and published in the *Transactions* and the *International Medical Magazine*, October, 1892. The normal equiposing of the superior trunk upon the lumbo-sacral spinal axis having been thus restored, whereby the evil influences from the weight above as a

prime causative factor in intrapelvic disturbances being happily overcome, there remains but attention to be given to the insignificant weight of the misplaced pregnant womb itself. This is usually easily corrected, when free from adhesions, by proper posturing, and afterward maintained by proper internal support with some pessary suitably fitted to the case.

When, on the other hand, the pelvis is abnormally distorted or contracted, the case of how best to conduct the gravidity has even a more unending source of discussion than the preceding condition. Here pelvimetry furnishes us the chief guidance. But, before we progress further, let us first break loose from the traditional shackles of our predecessors and their authority, which have too long retarded freedom of thought to such a degree that he who dared to doubt met but derision. I refer chiefly to the murderous practice of inducing premature delivery and embryulcia in this condition. In the present light of science these procedures have no place in the obstetric art in connection with a viable fetus. They simply deserve to be mentioned that they may be the more effectually relegated to the past. This leaves us to choose principally between but two procedures whenever we find the pelvis so distorted or contracted that it precludes all probability of delivering the living child—namely, symphysiotomy and Cesarean section. Without specifically considering all the points of this very serious condition—which, fortunately for us, is, comparatively speaking, very rarely encountered in the native-born American woman—I would unhesitatingly advise against the termination of gestation, looking more hopefully to ultimately saving the life of both mother and child by resorting to one of the aforesaid operations. It is to be remembered, however, that it is the duty of every intelligent obstetrician to become thoroughly familiarized with the indications as well as the technique of both these operations, neither of which is to be lightly undertaken by anyone who does not possess the requisite skill, in both the obstetric art and abdominal surgery.

With regard to the proper selection of these two operations, I can do no better than to quote my friend, Dr. Barton Cooke Hirst, of Philadelphia, who is an acknowledged authority on the obstetric advances, in his address before the Washington Obstetrical and Gynecological Society, November 17, 1893, and published in *The Medical News*, December 2, 1893: "It is obvious, therefore, that

symphysiotomy can be preferred to Cesarean section on the one ground alone, that it is less dangerous to the mother. A careful study of the results of symphysiotomy and Cesarean section will show that the latter is, at the very least, twice as dangerous to the mother as the former. The mortality of the infants is not quite so great in deliveries by Cesarean section. Moreover, by Cesarean section the child is sure to be delivered easily, no matter what the size and shape of the pelvic canal may be, and there is no necessity for that nice calculation in pelvimetry that is usually demanded before a contemplated symphysiotomy, a calculation in which even the best of us may err. With my own experience of three perfectly uncomplicated recoveries from symphysiotomy, I feel disposed to regard this operation with more favor than version and extraction in a markedly contracted pelvis. The opposite error of opening the symphysis when the pelvis is too small to permit of delivery by this means is more difficult to escape. It will only occur, of course, in a pelvis with a conjugate of 67 mm. or under, a degree of contraction not often seen among us; and, could we always be sure of the accuracy of our pelvic measurements, the mistake could pretty surely be avoided. I can imagine no more embarrassing predicament in obstetrics than a failure to extract the head after opening the symphysis. I should feel reluctant to operate again at the lowest limit for symphysiotomy unless I had the opportunity first to induce labor and artificially dilate the cervix some two or three weeks before term. In this case I should not hesitate to operate with a conjugate as low as 65 mm., and I believe delivery might be possible with a conjugate of only 60 mm. We may, therefore, be guided by the rule that at term symphysiotomy is available only in cases where the conjugate measures over 67 mm.; while if the conjugate is found to be 67 mm. or under, the only recourse to be had is Cesarean section.

The destruction of the embryo is, however, not only warranted, but becomes a requisite under certain circumstances or conditions, such as the presence of large fibroids in the body of the uterus, or large tumors involving both the ovary and uterus, also cancers of the uterus, and in certain cases of placenta previa. Placenta previa is another abnormal condition deserving attention. It properly belongs to that class of appalling accidents in the lying-in room as eclampsia, post-partum hemorrhage, rupture of the womb

in uterine pregnancy or of the cyst in tubal pregnancy, etc., which allow time only for action. Experience teaches that the proper use of the forceps in these cases is to be preferred to the hand, the chief reason being that a narrow-bladed forceps can be introduced much earlier than the hand; requiring a dilatation of only about one inch as compared with two and three-quarters inches for the hand, and, by grasping the head and bringing it down, tampon the placenta at once, whence time may be given sufficient to obtain full dilatation and delivery with the greatest possible safety to both mother and child. In these cases we may very properly follow the one line of action. As soon as the diagnosis of placenta previa is established our action must be prompt in evacuating the uterine contents. Hemorrhage is the danger signal. When this signal is given early, say, prior to the sixth month, and the diagnosis established, we should proceed without any regard for the life of the child. When, however, this signal is given later, we should proceed as promptly, but with all possible endeavor to save the life of both mother and child. Whenever hemorrhage takes place in these cases it is Nature's signal to us that there is great danger ahead; that the condition is so serious as to endanger, if not take, the life of the mother at any moment. We cannot accept the situation only as serious, but must act promptly and efficiently as follows:

The proper aseptic precautions being observed with special reference to the vagina and the accoucheur's hand, the patient being placed under anesthesia, introduce first the index finger into the cervix, dilating gradually until two fingers are successfully introduced, and, when sufficiently dilated to admit of the forceps, pass the fingers through the body of the placenta, rupturing the membranes, and place the forceps on the head, bringing it down, and tampon the placenta at once. When, as sometimes happens, the dilatation is greater and the presentation abnormal or less favorable the accoucheur had better resort to the passing of his hand and turning by Braxton-Hicks' method, drawing the child into the cervix, and thus arrest the hemorrhage. The hemorrhage once checked the subsequent delivery will be fully under control.

I have in this paper but sketched some of the salient and moot points of the prophylaxis of the complications and needless sufferings of pregnancy, with no attempt at thoroughly elucidating or elaborating any one of them. Having no pet theory to promulgate

and sustain at all hazards, no long list of cases and statistics, with quotation and abstract from an exhaustive roll of writers, has been made out. And, while universal conviction may not be with me on premises somewhat narrowly drawn, still I hope the attention of this Association may be drawn to their thorough consideration, that free discussion may evolve all the facts of this interesting subject, finally to find with many of you these facts received with favor and not only to maintain an excellent reputation, but also to increase in favor on closer acquaintance.

DISCUSSION.

DR. J. HENRY CARSTENS, of Detroit.—I desire to make a few remarks on the paper just read. It seems to me the women who have the easiest confinements, who have the least trouble, do not follow out the hygienic rules laid down and emphasized by the essayist. The poor German or Polish woman in Detroit does not drink any distilled water, but she eats and drinks what she can get, works around the house, and when confinement comes she has no trouble. It is the higher class of women that have trouble. I think we can do a few things. We should *not* impress upon these women the importance of stopping coition, for if we do, we will probably have trouble and a good deal more work for the abdominal surgeon in cleaning out gonorrheal pus tubes than we have now. If we do anything, let us educate these women what to do. Have them understand that as soon as they are pregnant, or suspect pregnancy, they should *call in a doctor*, so that he can watch them during the course of pregnancy, examine their urine and pelves, and take the necessary precautions to prepare them for labor.

Another point: we should try to educate general practitioners in regard to the importance of aseptic midwifery.

DR. JOSEPH HOFFMAN, of Philadelphia.—There are one or two points about this question of aseptic midwifery and the previous care of women that I desire to refer to. We know that very great stress is given in some quarters to the measuring of the pelvis. It is all well enough for those who are connected with medical colleges to measure a woman's pelvis, but if the ordinary general practitioner were to go about with a pelvimeter in his pocket and measure the pelvis of every woman who engages him he would have to do it in a life-preserver. The question of delivery does not depend so much upon the size of the

pelvis itself as upon the size of the child's head. This is an important point.

With regard to douching, etc., it is my opinion that infection often takes place through the introduction of the dirty fingers of the doctor rather than by auto-infection. Take the history of many confinement-rooms that have not the advantage of a clean basin, and sometimes not even a piece of soap, in which women deliver themselves; no matter how squalid the circumstances, they come out all right. It is frequently the dirty midwife or dirty doctor that causes the trouble.

Dr. H. W. Longyear, of Detroit.—One point I wish to touch upon in the author's paper is the subject of albuminuria of pregnancy. It is a subject I have been greatly interested in, as I believe that the ordinary treatment of the condition is inadequate. The essayist spoke of prophylaxis, but did not say very much about the prevention of albuminuria of pregnancy. Prophylaxis does not seem to amount to much in albuminuria of pregnancy, and, when it is present, I know of nothing that will do much good except emptying the uterus. Purging may be resorted to for a week or two, but a woman cannot be purged for two or three months, and so the treatment is narrowed down to the one thing: Shall we resort to premature delivery in these cases? The recommendation the author gave for examining the urine systematically in all cases of pregnancy is exceedingly valuable. Every pregnant woman should have her urine examined two or three times a month until the end of gestation. The more I have seen of the fatal results of albuminuria of pregnancy the more I am convinced that the only safety to the mother is to give her the benefit of the doubt by early delivery. I believe that the benefit of any doubt is due her in its widest sense, and that she should be delivered just as soon as we find albuminuria present accompanied by persistent scanty secretion of urine, without waiting for serious symptoms to indicate immediate danger. I believe this to be justifiable practice. My practice has not been so radical as this. My plan is to watch the woman who has albuminuria closely, examine her urine from day to day, and when the system seems to be surcharged with urea, as evidenced by certain symptoms, such as violent headache, dizziness, photophobia, etc., then deliver. I think I have saved some lives by it. I have found, in a good many instances, I have been too late when I have done this. We know that the consideration of the life of the child is the main thing that prevents us from delivering early. When we consider that many children are born dead when there has been albuminuria present, or at least die soon after birth, I think the life of the mother should be the first con-

sideration, and in these cases we should induce premature labor as soon as we find albumin, with evidence of retention of urea, while the mother is in good condition. She will undoubtedly recover promptly from the operation. I do not care whether the child is viable or not, although if approaching the seventh month I should try to tide her along to that time. Of course, there are some religious reasons why it should not be done before viability; but as the child is in danger of dying from the storms of eclampsia and uremia during two or three months, I do not believe the religious factor should entirely preclude the induction of labor, even before viability, where the symptoms referred to persist.

Dr. Charles A. L. Reed, of Cincinnati.—The views expressed by the preceding speaker are a trifle radical, and I am not perfectly prepared to accept them if it were true that albuminuria in pregnancy is not a remediable condition; but the fact is, that albuminuria is detected in a great many cases. I entirely agree with the essayist that these cases should be kept under observation, and frequent urinalyses made, with the object of early detecting albuminuria. The position which Dr. Longyear assumes would be a tenable one if this condition was not a remediable one. But these cases are curable, and I can see no reason for entering upon a murderous line of tactics simply because the baby is little. It occurs to me that the unborn innocents have rights that we ought to respect, and that we ought not to enter upon a line of practice which consigns them to inevitable death. The albuminuria can be eliminated from these cases, and the woman can be safely delivered by the resources of our art—perhaps not always, but frequently. When the fact is demonstrated that the case is not curable, then the proposition relative to the induction of premature labor can be taken under consideration; but the idea that we should at once bring on delivery the moment a diagnosis of albuminuria has been made, as has been suggested, is one I cannot permit to go from this presence without a challenge. A much more conservative plan is in accordance with the spirit of our profession and of our science.

Dr. Longyear.—You will find in some statistics by Cazeaux and Tarnier something like 40 per cent. of mortality of cases of albuminuria of pregnancy. I do not know of any other disease or condition that the human family is subject to which is treated with as little courage in which the mortality is so great. Operations for appendicitis are recommended and performed upon the slightest provocation, and the mortality is not to be compared with that of albuminuria of

pregnancy. I certainly think we should adopt more radical measures in such instances and save more women.

DR. REED.—I would like to ask Dr. Longyear if the 40 per cent. mortality applies to cases detected early and subjected to treatment.

DR. LONGYEAR.—I do not know anything about that.

DR. J. M. DUFF, of Pittsburg.—The paper to which we have listened covers a large field, and there are many points I would like to touch upon if time permitted. I congratulate the author on the erudition he has shown. I do not think, however, any rational obstetrician carries a pelvimeter around in his pocket daily. It is not necessary in the vast majority of cases that a pelvimeter should be used. The man who attends his cases, and carefully and properly examines them during pregnancy, will be able to detect any deformity of the pelvis which may exist, and determine by that examination whether a pelvimeter will be necessary afterward.

With regard to the question of albuminuria, if I understood Dr. Longyear correctly, I regret very much to hear him say that in every case in which we detect albuminuria we should bring on labor. About 20 per cent. of pregnant women have more or less albuminuria, and there are not more than 2 per cent. of pregnant women with albuminuria who have eclampsia.

DR. LONGYEAR.—From where do you get your statistics?

DR. DUFF.—From my own collection of cases. It is very seldom indeed that we have death from albuminuria where there is not eclampsia. I wish to be quoted, further, as saying that it has not been discovered how the different poisons are eliminated from the kidneys, and it has not been positively demonstrated that it is the albuminuria *per se* or uremic poisoning that kills women.

DR. JOSEPH PRICE, of Philadelphia.—If Dr. Longyear were to write to twenty of the most prominent active practitioners in the rural districts or in the mountains, and ask them the number of cases of eclampsia occurring in their practice out of from one thousand to five thousand labors, he would find that it would be less than 2 per cent. But the country practitioner has not the time to make such researches. Some of the old physicians in the Virginia mountains have had as many as three thousand women to deliver, and it would be impossible for them, without several clerks, to make correct analyses.

I was pleased with the interesting and scholarly paper of Dr. Dewees, but am sorry the author omitted the idiosyncrasies of old women. One of the most serious complications of gestation is the gossip of the old women about maternal impressions. I find, perhaps, nothing that

annoys and distresses the young prospective mother so much as this. They offer suggestions which create all sorts of vicious impressions.

In regard to practical obstetrics, the practice of cleanliness was alluded to, also early investigations in pelvimetry or sounding the uterus. A distinguished Eastern physician insisted upon early examinations in pelvimetry, palpation and auscultation, and it was not long before his students were sounding every uterus in town at the seventh or eighth month. The passage of the sound is fatal to the patient, and precipitates labors in this way. Old-fashioned obstetrics has gone largely out of date. Every school is advocating some premature methods and haste in obstetric work. They practise nothing but evil. Cesarean sections are quite common, and, unfortunately, the natural method of delivery is almost obsolete. Now, we have symphysiotomies done in the tenth pregnancy. Notwithstanding that these women were delivered before the doctor got to the house in previous labors, they have had a symphysiotomy done since.

In regard to cleanliness, I agree with Dr. Hoffman. The class of country practitioners I have alluded to are exceptionally clean. They rarely have cases of childbed fever or post-puerperal fever. The other class are filthy. In my previous work I attended as many as three cases a day. I made but few examinations, and used soap and brush freely in my early work. I did not practise at that time ante- or post-partum douchings.

Dr. E. W. Cushing, of Boston.—I think there is one point in the paper to which exception can be taken. I understood the essayist to refer to sexual immorality as being an increasing factor of our civilization, and that difficult labors were largely results of it. A hundred years ago there was more sexual immorality than there is now. I do not think the statement should go out from this Association that where a woman has a difficult labor it is probably owing to previous sexual immorality. The woman who has difficulty in labor is the one who is too much civilized, so to speak, where the sexual development has been stunted, and she gets a narrow, long cervix which splits, or an anteflexed uterus which does not properly take care of itself. It seems to me the women are reforming themselves in their mode of living as fast as can be expected, but that the profession is not keeping up with their progress in regard to taking care of them.

Dr. William B. Jones, of Rochester, N. Y. (by invitation).—I wish to object to considering a pregnant woman as being in a pathological state and to the idea that a woman, having become pregnant, should frequently thereafter seek advice and an examination. The examina-

tion of the urine is all right, but unless there is hemorrhage, albuminuria, or something else to indicate a pathological condition, I believe a great deal of harm is done if the women are not let alone. If the physician upsets the woman, he does worse than the old women referred to by Dr. Price, because the doctor has more influence upon his patient. I am still engaged in general practice, and if all those who come to me to engage my services in labor were required to submit to an occasional examination I am afraid I should receive calls from their husbands, and they would not be pleasant ones.

Dr. Longyear.—I will say that the majority of deaths I have seen from albuminuria incidental to labor have not been attended with eclampsia. We look for eclampsia, but they do not always die from it. They often die from uremic poisoning or cerebral effusion without convulsions. In some cases there has not been a sign of convulsion, or a serious symptom indicating the liability of the occurrence of an eclamptic attack, until the commencement of labor, when the whole storm has burst forth, requiring rapid delivery with its incident danger to both mother and child. How much better to have delivered such a patient before tissue-changes, resulting from long-continued albuminuria, had taken place and the blood had become loaded with urea.

Dr. Dewees (closing the discussion).—The Secretary, Dr. Potter, has just now urged one to be brief, as time was pressing. Therefore I shall have nothing further to say of special moment, except to thank the gentlemen for their kind consideration and treatment of my paper. I wish to say, however, in reply to Dr. Cushing, that I desire it to be understood that in my paper I stated that the beauty of our civilized women was on the increase rather than decreasing, but that their physical sufferings during pregnancy and childbearing are decidedly on the increase; that this condition can only be effectually overcome by wholesome education and training.

It certainly appears that the remarks of Dr. Hoffman and Dr. Price with reference to the pelvimeter are "too far-fetched" to have any rational bearing on the subject. A few words with reference to Dr. Longyear's remarks on albuminuria, and I have done. I simply desire to place myself on record as being convinced from personal observation that the conditions giving rise to albuminuria, uremia, and convulsions are amenable to prophylaxis, as well as of being successfully overcome when discovered in time, by that regimen which is necessary to a healthful physical condition. When Nature will be allowed to aid by its work in medicine, as in agriculture, horticulture, etc., then may we hope to become fully rewarded in preventing these sad accidents with our civilized childbearing women.

REPORT OF FOUR CASES OF APPENDICITIS SURGICALLY TREATED IN THIRTY-SEVEN CONSECUTIVE HOURS;

Together with Others so Treated at Longer Intervals.

By GEORGE S. PECK, M.D.,
YOUNGSTOWN.

Within the past few years many articles have appeared in the various medical journals concerning the diagnosis and treatment of appendicitis, and while the views regarding the symptomatology and diagnosis of the disease have become almost fixed, the same cannot yet be said of the treatment, concerning which there are many and widely different ideas. These differing opinions, however, do not reflect discredit or inefficiency upon any of the various classes of observers, but rather indicate a lack of statistics, which eventually alone should determine which plan of treatment is the safer to follow. I myself believe that we obtain the best results from the early surgical treatment.

The cases which I intend to present at this meeting are of different character and type, though all were treated surgically, with results as you will notice. But believing that there might be advocates for a different treatment than that pursued, you have my apology for presenting a paper on a subject so frequently discussed, though at present lacking, I believe, sufficient statistics from which to draw more definite conclusions.

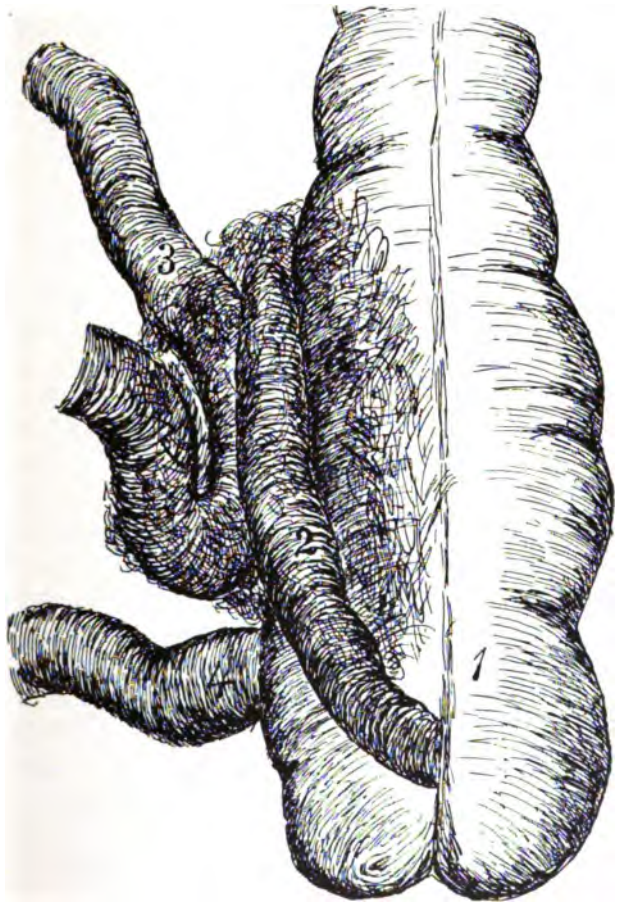
Case I.—Operation during interval between attacks. Obstruction of bowels on sixth day. Second operation. Recovery.

Miss L. H., single, aged twenty-six years, residence Warren, Ohio, was referred to me for examination by Dr. T. M. Sabin, July 19, 1894. The following brief history was obtained: In the early part of May she had an attack of appendicitis, lasting some three

weeks, during which time she was very ill; an operation was suggested, but, on account of a sudden favorable change, all operative procedure was postponed, and she was advised to have the appendix removed in the interval between attacks. I could easily map out a small tumor in the right iliac region, near the McBurney point, which was very tender upon deep pressure. I confirmed the diagnosis, and agreed with Dr. Sabin in regard to operative treatment. Upon our advice she entered the Youngstown City Hospital, July 23, 1894, and after three days' thorough preparation, at 11 A.M., July 26th, assisted by Drs. Zimmerman and Montgomery, Drs. Clark and Sabin being present, I made an incision four inches long directly over the cecum. Upon opening the abdomen I found the appendix very much enlarged, buried in a mass of strong adhesions between the ilium and cecum, and containing a large fecal concretion. The adhesions were soon broken up, the ileum returned, and the appendix removed by the flap method. The stump was invaginated and covered with peritoneum. The abdomen was then closed with silkworm-gut and the patient put to bed in good condition; pulse 80. On the evening of July 26th the temperature was 99.4°; pulse 82; July 27th, 8 A.M., temperature 99.3°, pulse 82; 7 P.M., temperature 100.4°, pulse 102; she had passed flatus freely per rectum, and was given saline cathartics. During the night she had three large movements. July 28th, 8 A.M., temperature 100°, pulse 84; 7 P.M., temperature 101°, pulse 106. During the afternoon and evening she had seven large watery passages. July 29th, 8 A.M., temperature 100.3°, pulse 104; had two watery passages and complained of pain in the abdomen, due to a collection of gas. During the afternoon she vomited twice a material resembling bile. At 7 P.M., temperature 100°, pulse 100. July 30th, 8 A.M., temperature 99.5°, pulse 86. She vomited a small quantity of bilious matter at 5 A.M., but passed a very comfortable night. Rochelle salt was ordered to be given, a drachm every hour until bowels moved. At 7 P.M., temperature 99.4°, pulse 90.

July 31st, 8 A.M., temperature 98.5°, pulse 90. Vomited a large quantity of brown material; ordered an enema containing Rochelle salt, to be repeated every four hours until bowels moved. During the entire day she was troubled greatly with flatulency and nausea, and at 2.30 P.M. vomited about a pint of brown material. A third attack of vomiting occurred at 3.30, and a fourth at 5.20. No re-

CASE I, FIG. 1.



APPENDIX IN SITU, VIEWED POSTERIORLY.

1 Cecum.
2. Appendix, held beneath ileum and cecum by adhesions.
3. Ileum, three feet above its terminus, 4.

sults followed the two enemas given during the day. At my visit, 7 P.M., I detected in the material vomited at 5.20 a decided fecal odor, and then realized that I had an obstruction of the bowel to deal with, and that prompt action was necessary. 7 P.M., temperature 99.3°, pulse 104. Realizing the gravity of the case I asked for consultation, and Dr. Rosenwasser, of Cleveland, was summoned.

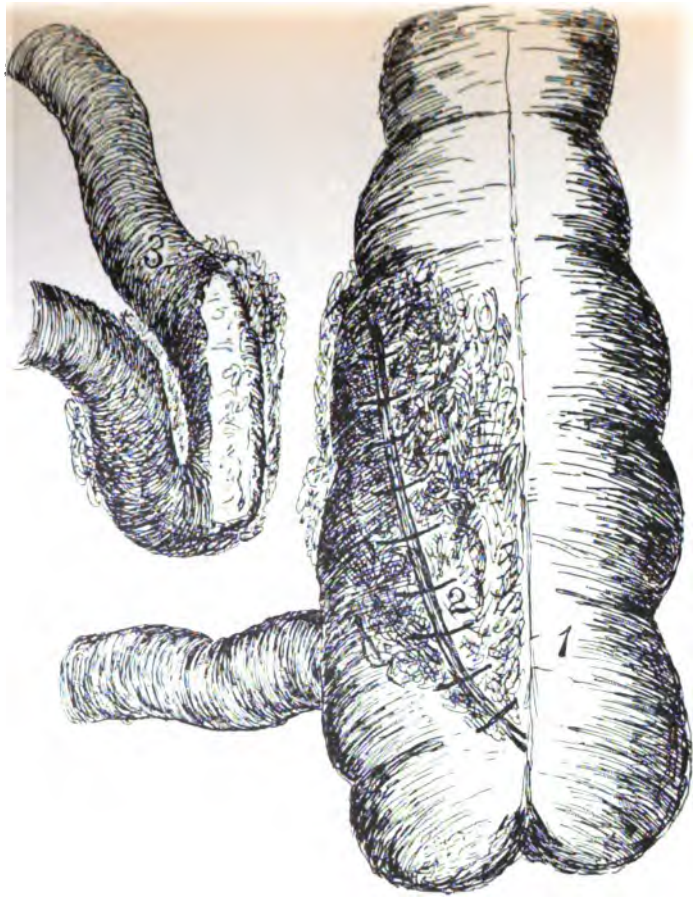
At 2 A.M., August 1st, Dr. Rosenwasser confirmed my diagnosis. She had not vomited since the early evening, but there was considerable tympanites, nausea, and restlessness; pulse 120, temperature 100°.

We decided to reopen at once; at 4 A.M. the patient was again etherized, and, assisted by Drs. Rosenwasser, Zimmerman, Montgomery, and my student, Mr. Lichty, I reopened the incision. The large intestines were very much distended with gas, the small intestines collapsed, and considerable serous fluid escaped from the abdominal cavity. Upon lifting the cecum I found everything at the seat of former operation in good condition. After a somewhat tedious search I discovered, about three feet from the ileo-cecal valve, a complete obstruction of the ileum by bands of old, dense adhesions (as represented in drawing No. 2). After thoroughly breaking up the adhesions, thereby liberating the obstruction, that portion of the ileum was brought out into the incision, and the opening into the abdominal cavity packed with iodoform gauze. I did not feel that my patient would permit of ideal surgery, and was content to do no more than was absolutely necessary to save life.

The patient was put to bed at 5 A.M., with a pulse of 134. External heat was applied, and hypodermatics of strychnin, gr. $\frac{1}{30}$, and digitalin, gr. $\frac{1}{100}$, were ordered every two hours. During the entire day of August 1st her pulse ranged from 140 to 160. Vomiting of fecal matter continued at frequent intervals. Tympanites increased. She complained of pain in the left iliac region, and was very restless. At 7 P.M., with the above symptoms present and becoming worse every hour, I felt as though the condition of my patient was growing more desperate, and that other obstructions had possibly been overlooked. As a temporary expedient I made a small opening in the ileum. Fecal matter and flatus came away in large amount, the vomiting ceased, and tympanites almost entirely disappeared.

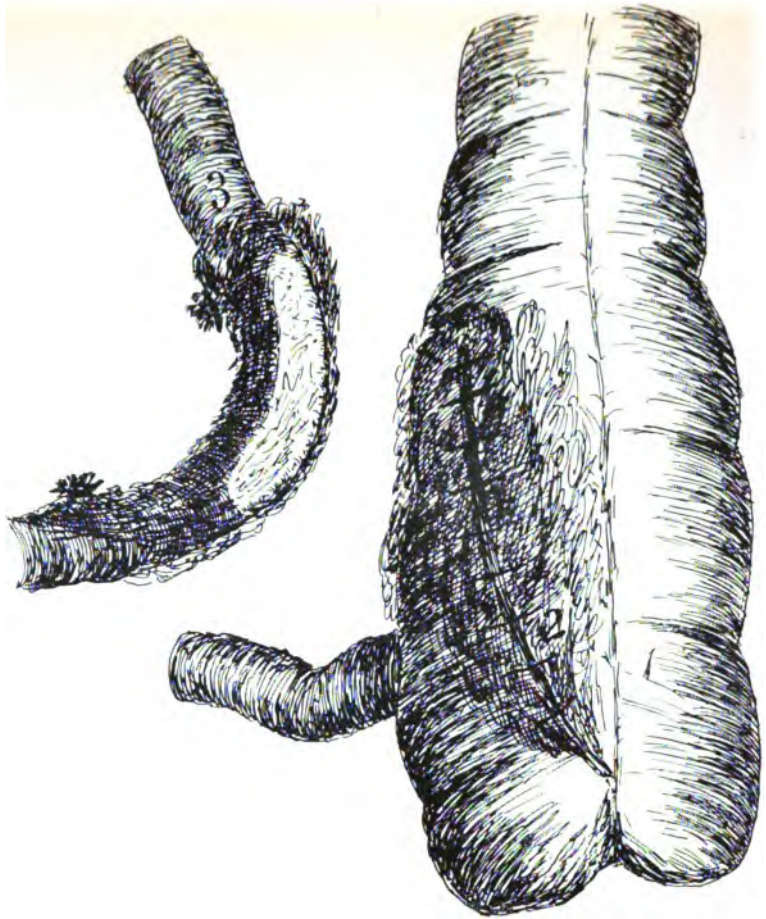
Thursday, August 2d, 8 A.M., temperature 99.3°, pulse 126; had

a fairly good night's rest; 7 P.M., temperature 99.3°, pulse 132; vomiting entirely ceased, and every symptom improved. Friday, August 3d, 8 A.M., temperature 99.2°, pulse 120; 7 P.M., temperature 98.5°, pulse 120. August 4th, 8 A.M., temperature 98°, pulse 114; 7 P.M., temperature 99°, pulse 118; August 5th, 8 A.M., temperature 99°, pulse 110; 7 P.M., temperature 99°, pulse 108. August 6th, 8 A.M., temperature 98.5°, pulse 104; 7 P.M., temperature 98.5°, pulse 118. From August 6th to 14th, temperature remained normal; pulse ranged from 104 to 118. Since August 1st she has passed a large amount of fecal matter through the artificial anus, at first liquid, but later more solid. Her food has been liquid and semi-solid. From August 1st to 11th she has passed flatus per rectum but twice, and then but a very small quantity. August 11th after giving an enema containing Rochelle salt, she passed well-formed fecal matter from the rectum for the first time since the second operation—eleven days before. During the day she had six good natural passages, and passed flatus freely. August 12th, bowels moved twice, naturally, and the amount discharged through the fecal fistula was greatly diminished. August 13th, the nineteenth day, the temperature commenced to rise, and there had been considerable fluctuation up to the present time, as you will observe by the charts shown herewith. The integument around the fecal fistula for a distance of some two inches was so painful from excoriation that, against my better judgment, I attempted to close the fistula, August 22d, the twenty-eighth day. For three days she was very comfortable, when, upon the thirty-first day, a small amount of fecal matter came through the fistula. On the thirty-fifth day I made a second unsuccessful attempt to close the fistula. From the thirteenth day to the present time she has had from one to three daily passages per rectum, and the amount coming through the fistula diminished rapidly. She sat up for the first time on the thirty-third day; walked about the room on the thirty-eighth day; and has been out doors every pleasant day since September 3d. The temperature reached normal on the fifty-first day, and continued so up to the present. From the forty-sixth to the fifty-first day the fistula has been dressed once every thirty-six hours. From the fifty-first to the fifty-fifth day the fistula was dressed every forty-eight hours. The diet during the entire fifty-five days has been liquid and semi-solid. She is gaining strength every



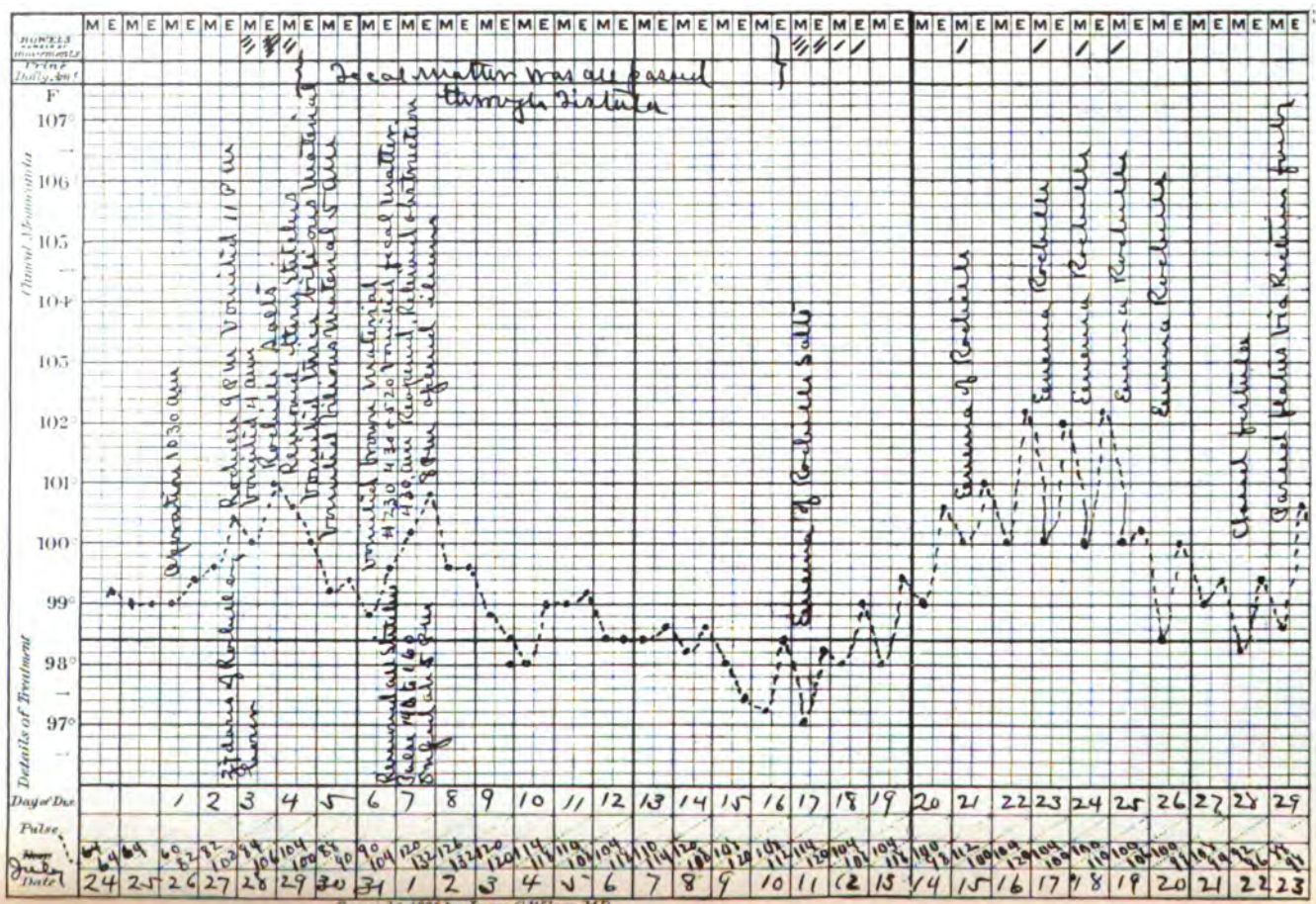
CASE I., FIG. 2. APPENDIX REMOVED (FIRST OPERATION).

1. Cecum. 2. Stitches through peritoneum of intestine. 3. Ileum, released from cecum and appendix.



CASE I., FIG. 3. ADHESIONS BROKEN TO REMOVE OBSTRUCTION TO ILEUM (SECOND OPERATION).

1. Cecum. 2. Stitches through peritoneum. 3. Ileum, freed from adhesion.



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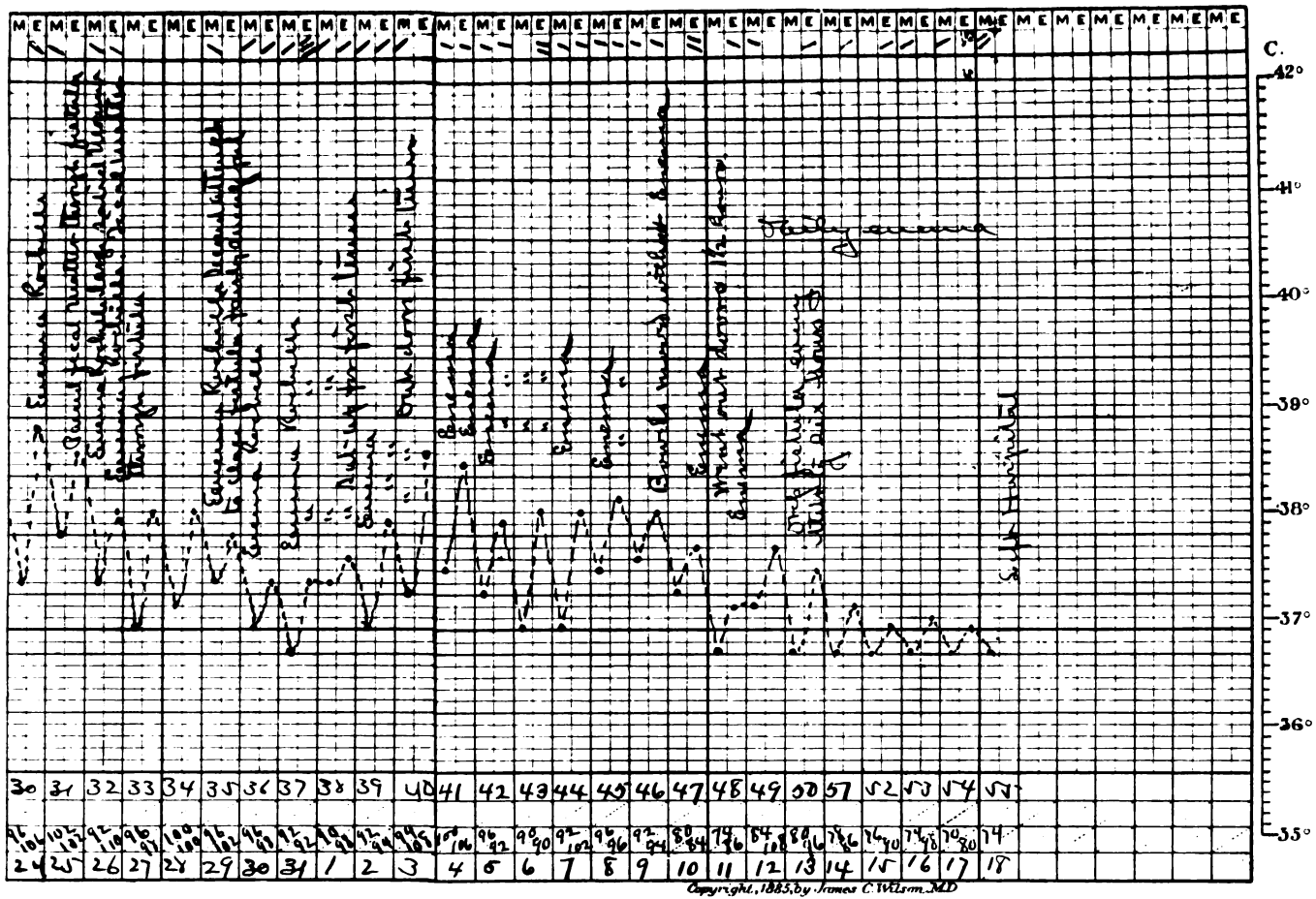
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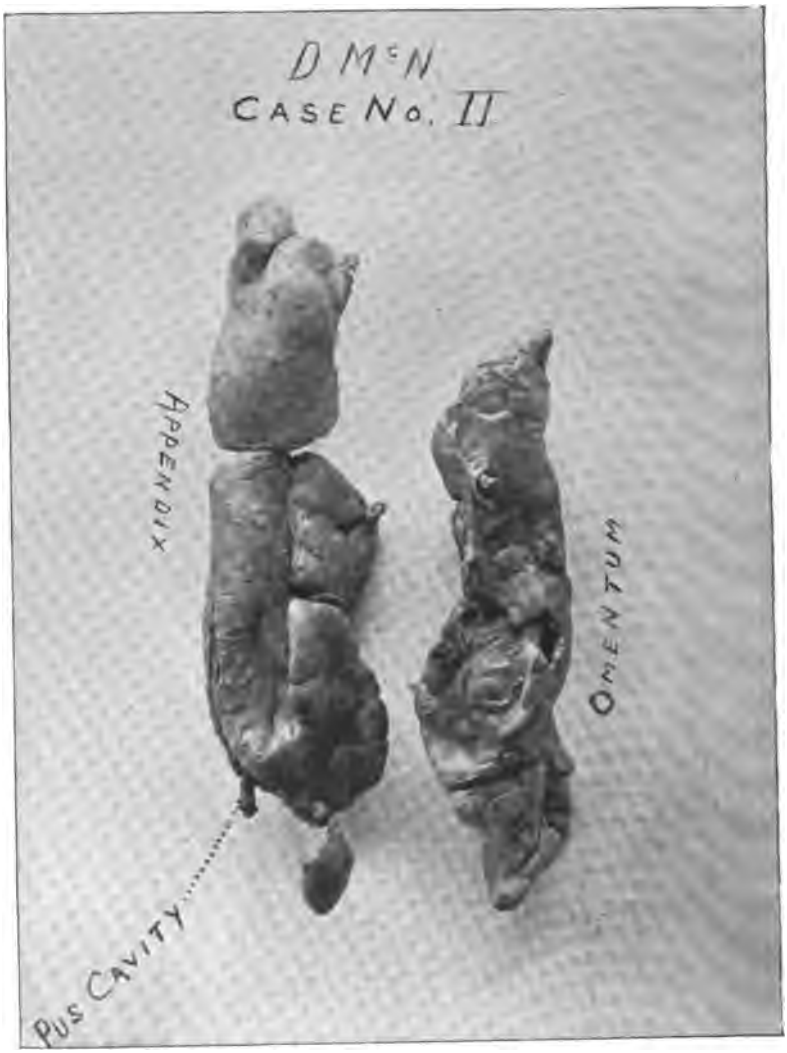
CHART. CASE I.



APPENDICITIS. SPECIMEN FROM CASE OF DR. PECK.

day, and left the hospital September 18th, fifty-five days after the first operation.

CASE II.—Operation during the fourth day. First attack. Recovery.

Mr. D. McN., aged thirty-two years, married, and a resident of Youngstown, Ohio; occupation, puddler.

Previous history. With the exception of diseases incidental to childhood, he has enjoyed perfect health.

At 3 A.M., Monday, July 23, 1894, while preparing for work, he was seized with severe pain in the region of the stomach, extending over entire abdomen. After taking some breakfast and a dose of Jamaica ginger, he went to work. The pains soon became griping in nature, and the stomach irritable, but he was unable to vomit. He continued his work about an hour, when the pains became so severe that he was obliged to quit, and was removed to his home. During the morning he had three scant, watery stools. After trying the usual home remedies without success, Dr. J. J. Thomas was called, about 7 P.M., July 23d. Upon examination he detected all the symptoms of appendicitis. Temperature 100°, pulse 96. He advised Rochelle salt in drachm doses every hour until bowels moved. During the next two days, July 24th and 25th, the patient had fifteen watery discharges. July 26th, 8 A.M., there being no improvement in symptoms, I was asked to see him in consultation with Dr. Thomas. Upon examination I found a mass in the right iliac region, which was exquisitely sensitive upon the slightest pressure.

I confirmed the doctor's diagnosis, and advised an immediate operation. During the afternoon he was seen by Dr. A. M. Clark, who (independently of Dr. Thomas and myself) confirmed the diagnosis. He was at once removed to the city hospital, and at 5.30 P.M., July 26th, assisted by Drs. Thomas, Zimmerman, and Booth, and in the presence of a number of local physicians, I made the usual oblique incision into the peritoneal cavity, and removed a very large appendix containing pus and a large fecal concretion, together with a portion of thickened adherent omentum. The opening in the peritoneal cavity was packed with sterilized gauze. Upon further examination I ruptured an abscess sac (extra-peritoneal), containing about two ounces of pus. The cavity was well irrigated with a bichloride solution, a large drainage-tube placed in

position, the lower part of the incision and the peritoneum closed with silkworm-gut, and the abscess cavity packed with iodoform gauze. The patient made an uninterrupted recovery, and left the hospital Thursday, August 23d, four weeks after operation. The highest temperature reached was 101°, during the second day, pulse 100. After the second day temperature and pulse gradually decreased until the seventh day, when they reached normal and so continued.

CASE III.—Operation on third day of third attack. Recovery.

July 27, 1894, I was asked to see, in consultation, G. H., a painter by trade, aged twenty-seven years, married; residence, Youngstown, Ohio.

Previous history. Has had diseases incidental to childhood. Usually constipated, and was obliged to take laxatives frequently. Was troubled with indigestion at times, and occasionally had attacks of diarrhea.

Some eight years ago he was taken sick with what he now thinks was appendicitis, presenting the following symptoms: pain in the region of stomach, after two days becoming localized in the right iliac region; pain was excessive. While in bed the limbs were flexed; vomited frequently, and was constipated. The attack lasted one week, no physician having been called.

Two years ago he had a similar attack, with pain and vomiting as before, lasting three or four days. This time a physician was called; he was given saline cathartics, and after bowels moved freely he steadily improved. He thinks he was not so strong since the last attack, being more constipated, and having had frequent slight pains in the abdomen and back.

Tuesday, July 24, 1894, after eating a hearty supper he complained of pain in the abdomen, much like the pain of two years previously. From 8 to 12 P.M. he drank half-pint of whiskey and vomited frequently. At 2 A.M., July 25th, the pain becoming more severe, Dr. A. M. Clark was summoned. The doctor recognized the possibility of an appendicitis, and at once prescribed Rochelle salt, drachm doses every hour until the bowels moved. Morning temperature 100°, pulse 91. During the day he had three large watery movements. Pain was relieved temporarily, but at 9 P.M. it returned and became localized in the right iliac region, not being severe except upon pressure. Evening temperature 102°, pulse

100; vomiting ceased. Thursday, July 26th, 8 A.M., temperature 101°, pulse 100; 7 P.M., temperature 102°, pulse 104. Had a very comfortable day, pain not being present except when moving about.

Friday, July 27th, 10 A.M., temperature 102.3°, pulse 100. Upon examination I could detect a small mass in the right iliac region at the McBurney point, which was very tender to touch. The diagnosis of appendicitis was confirmed, operation advised, and he was at once sent to the city hospital. At 4.30 P.M., Friday, July 27th, assisted by Drs. Zimmerman and Booth, and in the presence of the staff, I made the usual oblique incision four inches long directly over the mass, and opened the peritoneal cavity. After packing the cavity with gauze I removed a very large appendix, which contained about half a drachm of pus. At its attachment to the cecum the appendix was very large and ulcerated, so much so that my ligature cut through, making it impossible to invaginate the stump. After cutting away the appendix I touched the stump and a spot on the cecum with pure carbolic acid. After irrigation I inserted a small drainage-tube in the lower angle of the incision, extending down to the cecum, and closed the opening with silkworm-gut. The patient made a good recovery, and left the hospital August 23d, twenty-seven days after operation. Highest temperature since operation was 102.4°, pulse 90, the afternoon of second day. Temperature reached normal on seventh day, and so continued.

CASE IV.—Operation during tenth day. Death from septic peritonitis sixty-five hours after operation.

G. L., female, aged thirteen years; residence, Briar Hill.

Left home to visit at Niles, Ohio, July 9, 1894, apparently well, although for some little time before she had complained of some pain across the lower part of the bowels, which her parents called "growing pains." During her visit she complained of being unusually tired. During the night of Thursday, July 19th, the pains became very severe and vomiting set in. Friday, July 20th, the pains having subsided, she walked about a mile to visit a friend, and while there she was obliged to lie on a couch the greater part of the day. The pain, which had been general, now became localized in the right iliac region. She had some fever, the tongue was heavily coated, and she vomited frequently.

Saturday, July 21st, she felt somewhat better, had no fever, but her stomach was still irritable. She was up and about all day, and

seemed well in the evening; in fact, well enough to walk three or four blocks.

Sunday, July 22d, she was much better all day, and went to church in the evening; after church she ate hickory nuts and blackberry pie. A restless night followed, but the next day (Monday, July 23d) she was better, the pains having almost entirely subsided.

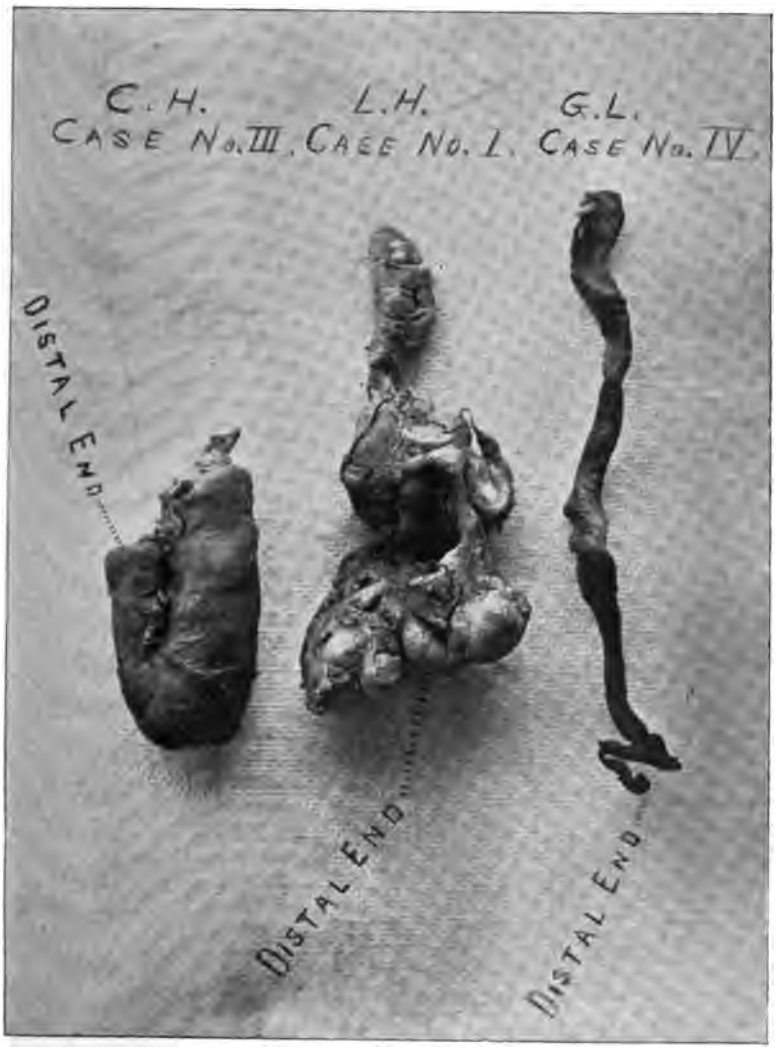
Tuesday morning, July 24th, she felt quite well, but in the afternoon the pain in the right iliac region reappeared.

Wednesday, July 25th, she returned to her home at Youngstown, having carried her valise about a mile to the depot before taking the train. She appeared well, and during the evening attended a party, where she ate cake and watermelon.

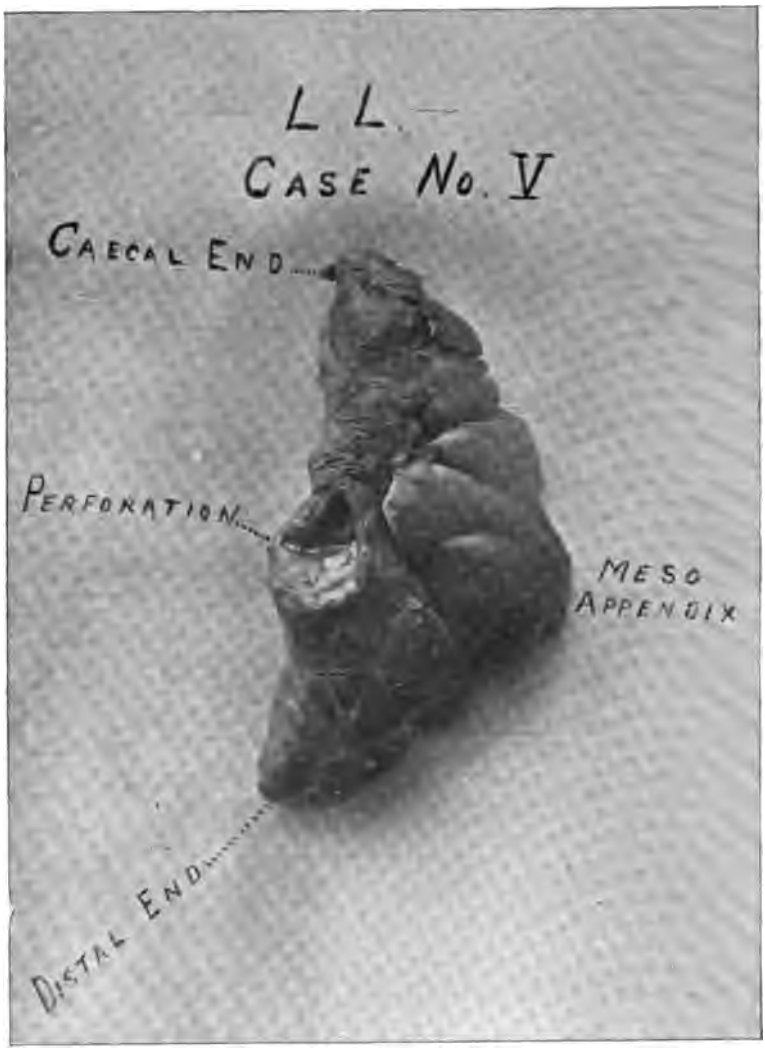
Thursday, July 26th, she washed the breakfast dishes, and was up and about the house the greater part of the day. Her parents noticed that she looked sick and seemed tired. In the evening she was much worse, and at 11 P.M. Dr. H. E. Blott was summoned. He found her suffering intense pain in the right iliac region and with a temperature of 100°, pulse 112. He at once suspected appendicitis, and advised saline cathartics.

Friday morning, July 27th, temperature was 100.5°, pulse 112. During the night she had a severe chill, and the bowels moved freely; pain was greatly relieved, but there was much tenderness in the right iliac region.

I was asked to see her in consultation with Dr. Blott at 10 P.M., July 27th. I found her with a temperature of 102.5°, pulse 120; face flushed and somewhat restless. Upon examination I detected a fluctuating tumor in the right iliac region, but a little above the McBurney point, which was extremely painful when touched. Examination per rectum was negative. I confirmed Dr. Blott's diagnosis, and advised immediate operation. The parents were anxious to wait until the next morning, but I insisted upon doing it at once, telling them that the case was desperate, and that only immediate action would give her any chance of recovery. She was at once sent to the hospital, and at midnight, assisted by Drs. Zimmerman and Booth, and in the presence of the staff, I made an incision over the tumor, running obliquely downward and forward, and removed nearly a quart of pus. Unfortunately I opened the peritoneal cavity, which I hurriedly packed, in order to prevent the escape of pus into the cavity. Upon examining the pus cavity I



APPENDICITIS. SPECIMEN FROM CASE OF DR. PECK.



APPENDICITIS. FROM CASE OF DR. PECK.

found a long gangrenous appendix, which was detached, and removed by irrigation. Upon further examination a large gangrenous mass was found upon the posterior surface of the cecum. After again washing the cavity, a drainage-tube was inserted and the cavity packed with iodoform gauze. The patient was put in bed very much shocked, with a pulse of 160. External heat was applied, and hypodermatics of strychnin, grain $\frac{1}{30}$, and digitalin, grain $\frac{1}{100}$, were ordered to be given every two hours.

My prognosis given to the parents immediately after the operation was unfavorable. July 28th, 8 A.M., temperature 102°, pulse 120; 7 P.M., temperature 101.2°, pulse 120. During the day the pulse was imperceptible at times. About eighteen hours after operation she seemed to rally from the shock and the hypodermatics were discontinued.

July 29th, 8 A.M., temperature 101.4°, pulse 120; 7 P.M., temperature 102.3°, pulse 150; she had a very comfortable night, but at 7 A.M. became delirious, and remained so until her death from septic peritonitis, at 5 P.M., July 30th, sixty-five hours after the operation.

At the autopsy by Mr. Lichty, four hours after death, we found extensive recent adhesions throughout the peritoneal cavity, and old firm adhesions in the right iliac region. Around the incision quite an amount of inflammatory material was thrown out, beautifully illustrating Nature's attempt to protect the peritoneal cavity. The omentum was bound down by recent adhesions, especially in the right iliac region. On the posterior surface of the cecum there was a large gangrenous patch. The pelvic cavity contained from four to six drachms of free pus. I must confess that the opening into the abdominal cavity was particularly unfortunate to the patient, and, although I made every effort to prevent pus entering the cavity, I was not successful. But if my patient had not died from septic peritonitis, I think the gangrenous patch in the cecum would, undoubtedly, have produced death.

CASE V.—*Perforating appendicitis.* Operation during the third day. Death from septic peritonitis in twenty-seven hours.

L. L., aged thirty-three years, a large, muscular man, weighing two hundred and twenty pounds; occupation, druggist and postmaster of Girard, Ohio. With the exception of a slight headache he was in his usual good health Sunday, August 26, 1894. While attending his duties, about 10 A.M. Monday, August 27th, he com-

plained of pain in the abdomen, which he attributed to some fruit eaten during the morning. The pain becoming more severe and the stomach irritable, he, druggist-like, took a large dose of some cholera mixture. Not obtaining the necessary relief, he resorted to a large dose of chlorodyne. At 4 P.M. the pain was very severe, and located in the right iliac region. Dr. Brooks, of Girard, was called. Dover's powders, 10 grains every four hours, and hot applications were ordered.

Tuesday, August 28th, passed a very restless night, vomited several times, pains increasing in severity. The physician was again called at 3 A.M., temperature 102.2°, pulse 96. He ordered phenacetin, 6 grains, *quiniæ sulph.*, 2 grains, every four hours. Had a fairly comfortable day until 5 P.M., when suddenly the pain in the right iliac region became intensified. A hypodermatic, *morph. sulph.*, grain ¼, was given, hot applications continued, and an enema of hot water given without effect.

Wednesday, August 29th, slight delirium during the night, tongue red and dry. While quiet in one position pain not so severe. A second enema was given, and a small amount of fecal matter came away. Patient was more restless, and delirium more marked. I saw him in consultation with Dr. Brooks at 8 P.M., Wednesday, August 29th, temperature 99.2°, pulse 116, expression anxious, tongue dry, respiration somewhat accelerated, and some slight delirium. Upon examination I found a moderately flat abdomen on left side, some fulness and exquisite tenderness on the right, especially marked at the McBurney point. I diagnosticated appendicitis and advised an immediate operation. I told the friends I feared perforation, and if such was the case my prognosis would not be favorable. He was at once moved to the city hospital. At midnight (Wednesday, August 29th), assisted by Drs. Zimmerman and Welsh, I made the usual oblique incision, and removed the appendix, which was found situated at the outer side of the mesocecum and mesocolon. It was intra-peritoneal, and had a mesentery of its own about three inches long. It was very much inflamed, enlarged, and perforated about midway between the cecal and distal end, containing a fair-sized fecal concretion near its proximal end, and at its distal end pus. A cavity containing about four ounces of pus was opened. The cecum was dark in spots, presenting the appearance of early gangrene. The vitality being so poor, I was unable to invaginate the

stump. After a thorough irrigation of the general peritoneal and pus cavity I passed a rubber drainage-tube down to the stump of the appendix and packed the incision with iodoform gauze. Pulse after operation 116.

Thursday, August 30th, 8 A.M., temperature 99.4°, pulse 116. Vomited about an ounce of dark-colored material. Tongue dark-brown and dry. Delirium increasing and abdomen tympanitic. Vomited dark-colored material at 3.30 P.M. At 4 P.M. an enema with rectal tube was given; no results. At 5 P.M. vomited bilious material. At 6.15 vomited dark-colored material. At 6 P.M. ordered a glycerin enema. Small movement, and passed some flatus. 8 P.M., temperature 100.4°, pulse 128, very restless and delirium continuous. I advised reopening, and asked for consultation, and Dr. C. B. King, of Pittsburg, was called.

At 2 A.M., August 31st, Dr. King saw him in consultation, and at 2.30 A.M. the patient was again etherized and the incision reopened. Not being able to reach the obstruction, we were obliged to make a median incision. A band of recent adhesions was found, producing a complete obstruction of ileum. This was soon liberated, and flatus passed freely into the collapsed small intestines. The abdominal cavity was thoroughly irrigated with distilled water. While placing a drainage-tube, with my two fingers in the hollow of the sacrum as a guide, a pus sac was discovered deep in the pelvis in the recto-vesical pouch, containing fully a pint of pus, which had a distinctly garlic odor. The cavity was again irrigated, a drainage-tube placed in position, and the incision closed with silk-worm-gut. The first incision was packed with iodoform gauze. The shock was too much for the patient, and he died at 3.30 A.M., August 31st, twenty-seven hours after the first operation.

Autopsy immediately after death revealed an extensive peritonitis, the omentum being adherent to the cecum. The obstructive band in the ileum was found to be twenty inches above the ileo-cecal valve. The ileum was dark and gangrenous six inches immediately below the seat of obstruction, and gangrenous in spots thence on to the ileo-cecal valve. The cecum was dark, inflamed, and with thickened coatings. The sutures at the stump and in the peritoneum were found in good condition. No extraperitoneal pus cavity could be found, and there was no evidence of any remaining pus, either extra- or intraperitoneal, in the right iliac region. After

a very thorough search we were unable to find the pus sac ruptured while placing the drainage-tube in position.

CASE VI.—*Fulminating appendicitis.* Operation during the fourth day. Death from septic peritonitis four hours after operation. Patient of Dr. M. S. Clark.

C. L., aged twenty-five years, a large, well-developed colored man, a musician by occupation. From him the following brief history was learned: with the exception of feeling a little tired, he was in his usual good health previous to September 10, 1894. At 3 A.M. of that day he complained of a sudden severe pain in the lower part of the abdomen, accompanied by slight nausea, but no vomiting. After taking some patent medicine the pain subsided, and he walked about two miles, carrying a valise part of the distance. September 11th, during the night the pain again became severe and localized in the right iliac region, and he vomited several times. Five compound cathartic pills were taken without effect. September 12th, passed a very restless night; mustard plasters and hot applications were applied to the abdomen, with slight temporary relief. Four or five large doses of sulphate of magnesia had been taken without effect. The pain, nausea, and vomiting continued during the past three days. At 5 P.M. the pain became so severe and constant that Dr. M. S. Clark was called. The pain had extended over the entire abdomen. The right knee was flexed. The abdomen tympanitic, except in the right inguinal region, where there was some dulness, together with marked tenderness at or near the McBurney point. Temperature 102.3°, pulse 120, and there had not been an evacuation of the bowels during the past five days. Appendicitis was diagnosticated, and an immediate operation advised. The operation was refused; a saturated solution of Rochelle salt to be taken freely and often. Turpentine stupes and hot applications applied to the abdomen were ordered. At midnight the pain became intense, and there being no effect from the Rochelle salt, it was discontinued, and a hypodermatic of *morph. sulph.*, grain $\frac{1}{2}$, was given, to be followed by morphin, grain $\frac{1}{3}$, every three hours if pain continued. September 13th, A.M., condition much the same as yesterday, although he had had some rest during the night. An operation was again urged, but consent was delayed until the arrival of friends from a distance. Continued hot applications, and ordered *hyd. chlo. mit.*, grain v., every hour until bowels moved. At noon much

worse. Temperature 102°, pulse 140. 2 P.M., Dr. Clark asked me to see him in consultation; I found him lying in bed with both knees flexed. The abdomen was quite tympanitic and resistant. There was dulness in the right iliac region, and I could readily detect a large, exquisitely tender, fluctuating mass occupying almost the entire right side. The tongue was heavily coated, but moist, and there was an anxious expression of face. Temperature 102°, pulse 120, of good volume. The diagnosis of appendicitis with septic peritonitis was confirmed, but operative interference was not urged. When given my prognosis the patient begged me to do everything possible that would give him a chance for life. He was at once sent to the city hospital, and at 3 P.M., assisted by the staff, I made the usual oblique incision, and evacuated a large abscess sac. A large appendix, gangrenous in its entire length, was easily found, quickly ligated and cut away; after thorough irrigation with a bichlorid solution, a drainage-tube was placed in position, and the cavity packed with iodoform gauze. The patient was put to bed thoroughly shocked, pulse 160, weak and thready. Stimulants in the way of external heat, hypodermatics of strychnin, digitalis, and nitroglycerin were used, but the patient died four hours after operation.

Autopsy three hours after death revealed general septic peritonitis, recent adhesions throughout the peritoneal cavity, almost the entire omentum gangrenous and adherent to the cecum, and the abdominal cavity filled with fluid.

CASE VII.—*Operation for pyosalpinx involving the appendix.*

Mrs. E. P., aged thirty years, residence Niles, Ohio, in company with her physician, Dr. Williams, consulted me at my office, September 11, 1894, presenting the following history: she has been married eleven years, has had one child and three miscarriages. Her menstrual flow appeared at the age of thirteen, and has always been more or less painful. Soon after the first miscarriage, five years ago, she complained of bearing-down pain in her back, especially while in an erect position, occasional pain in right iliac region, shooting down the posterior portion of thigh, and increased by walking or any sudden jar. Constant leucorrhea, thick in character, and at times of greenish color. Bowels always constipated, defecation and micturition generally painful. The menstrual flow during the past five years has been very irregular, recurring at times in fourteen, twenty-one, and forty-two days, at times excessive,

and always attended with a great deal of pain, nausea and vomiting. During the summer of 1891 she had frequent severe paroxysms of pain in the head, which soon became general over the entire body, and there was a constant nausea with frequent vomiting. During September, 1891, she had an attack of severe pain in the right side, followed by nausea and vomiting. Mustard plasters and hot applications were applied, and the bowels freely opened with saline cathartics. She was confined to the house about two weeks. No physician was called. Since then she has had occasional cramps in the right side, but not severe enough to call her physician, until August 23, 1894, when she was suddenly seized with severe pain in the region of the stomach, accompanied by nausea and vomiting. Dr. C. C. Williams, of Niles, was called, and gave hypodermatically *morph. sulph.*, grain $\frac{1}{4}$, August 24th. Morning temperature 103°, pulse 100; evening temperature 103.5°, pulse 108. The pain was now localized in the right iliac region. The doctor then discovered, at or near the McBurney point, a large sausage-shaped mass which was exquisitely tender to touch; saline cathartics were freely given, and after a thorough evacuation of the bowels the mass and tenderness entirely disappeared. The temperature and pulse became normal on the 27th. During the interval between August 30th and September 7th she was up and about the house, although she complained of occasional sharp, shooting pain in the right side. September 7th, she discovered a second mass in the right side, but situated much lower than the first. Her physician was again summoned, saline cathartics were ordered, and free catharsis obtained, but the mass did not disappear. Upon the advice of her physician she consulted me September 11, 1894. Examination per vaginam revealed an enlarged, retroverted, and prolapsed uterus. There was a large sensitive mass completely filling the right pelvis, and extending outward from the cornu of the uterus. The left pelvis was free. By the bimanual examination I could map out a large sausage-shaped mass beginning near the right cornu of the uterus and running outward, downward, and inward close to the symphysis, and terminating about the centre of the uterus. Her temperature was 102.5°, pulse 104. Diagnosis, right pyosalpinx with ovarian abscess involving appendix. An immediate operation was advised and urged. She returned to her home, and the next day decided to take my advice.

She was admitted to the Youngstown City Hospital September 12th, and prepared for operation. During the next three days her temperature ranged from 100° in the morning to 102.3° in the evening; pulse 96 to 114; without the use of laxatives she had from ten to fifteen passages daily, indicating pretty thorough sepsis. At 10.30 A.M. September 15th, assisted by Drs. Zimmerman and Welch, and in the presence of Drs. Williams, Booth, and Montgomery, I opened the abdomen by a median incision three inches long. The small intestines were found matted together and adherent to the parietal peritoneum; with considerable difficulty I gently liberated the adhesions to the parietal peritoneum, and when deep in the pelvis between the bladder and uterus a pus sac containing about eight ounces of pus was ruptured; a portion of the matted small intestines was brought out of the incision, and the cavity thoroughly irrigated. The cecum, which was bound down by old dense adhesions, was then liberated, and the posterior surface found covered with well-organized inflammatory material. The appendix was not found, having either sloughed off or was bound closely to the cecum by the dense adhesions. Upon further examination I discovered a complete rupture of the ileum, about fifteen inches from the ileo-cecal valve, which was at once repaired by an end-to-end anastomosis with a medium-sized Murphy button. After separating the mass of matted intestines, which was found to involve between three and four feet of the ileum, I carefully searched for further trouble, and found the intestinal peritoneum torn in several places, which were repaired with a continuous suture. The cavity was again thoroughly irrigated, the adherent part of the intestine was covered with aristol, a drainage-tube placed in position, and the incision closed with silkworm-gut. Time of operation one hour.

The patient left the table considerably shocked, with pulse 150; she was surrounded with hot applications and given hypodermatics of strychnin, grain $\frac{1}{20}$, digitalin and nitro-glycerin, grain āā $\frac{1}{100}$, every two hours. 12.45 P.M., one hour after operation, pulse 128; 4.45 P.M., pulse 113. Hypodermatics lengthened to every four hours. 8 P.M., temperature 99.5°, pulse 114. Midnight, passed flatus freely. September 16th, 8 A.M., temperature 101.1°, pulse 112. The glass drainage-tube was removed at 10 A.M.

The Murphy button was passed at 8.30 P.M. Sunday, October 7th, twenty-two days nine and one-half hours after operation.

Upon the twenty-third day the temperature and pulse became normal, and continued so to the thirty-third day, when she was discharged from the hospital. From the third to the twenty-second day, without the use of laxatives, she had from three to five passages daily. Since the passage of the button the intestinal irritation has subsided, and I have been obliged to use a mild cathartic every second day. The diet during the first eight days was liquid, semi-solid up to the fifteenth, and since then she has been allowed to have whatever nourishment she desired.

APPENDICITIS: OBSERVATIONS BASED ON THE CLINICAL STUDY OF EIGHTY-FOUR CASES.

By WILLIS G. MACDONALD, M.D.,
ALBANY.

ABDOMINAL surgery has, for the most part, passed beyond the domain of experimental surgery. Accumulated experience and collective investigation have fixed certain principles which serve universally as guides in the proper treatment of intra-abdominal conditions.

Naturally, in disease associated with the female generative organs the practice first became established, because these conditions were first treated surgically.

It is not many years ago that controversy waxed warm in societies and journals concerning the proper method of treating the pedicle after the removal of ovarian cysts. We are all familiar with the great volume of speculative and controversial literature which presented itself on this and allied subjects; it has served its purpose in establishing facts.

The surgery of the kidneys, the spleen, the liver and gall-duct, and the intestinal canal, has in the main passed through the period of development to that of established practice. The surgical treatment of the inflammatory conditions occurring in the right iliac fossa is now coming to the close of its evolutionary period. Out of all that has been determined in the laboratory, and in the anatomical theatre, in the operating-room, and at the bedside, much material has accumulated; useful facts have become established, and we have, as surgeons, a basis from which to act. Reviewing what has been done, gathering together the facts confirmed, it appears that the three most important landmarks as yet settled are the following:

I. That the vermiform appendix is the source of all inflammatory

conditions arising in the right iliac fossa. Practically this proposition is true. Exceptions are so rare that they require no serious consideration in the management of the conditions. Common agreement in the truthfulness of the origin in the appendix of the inflammatory condition, simplifies pathology and abolishes from medical nomenclature the terms typhlitis, perityphlitis, and paratyphlitis, these being names not representing pathological conditions, except in rare instances.

II. That the vermiform appendix is, with few exceptions, intraperitoneal; hence, appendicitis is always an intraperitoneal inflammation. In other words, that you cannot touch the vermiform appendix without introducing the finger into the peritoneal cavity, is a practical canon of surgical belief. Pathological conditions found at the post-mortem table which have seemed to indicate the extraperitoneal position of abscesses were founded on insufficient investigation and improper deduction. All extraperitoneal operations for appendicitis are consequently false in their surgical conception.

III. That idiopathic peritonitis is a very rare condition, if it occurs at all. A decade ago the vital statistics showed a large number of deaths from peritonitis pure and simple. Fortunately, more exact terms are now substituted in certificates of death—intestinal obstruction, rupture or perforation of the stomach, intestines or gall-bladder, salpingitis, and appendicitis.

Given a healthy adult, male, taken suddenly and dangerously ill with symptoms of general peritonitis, and the diagnosis of acute perforating appendicitis may be ventured with absolute correctness, nine times out of ten, even if the fecal symptoms are obscure.

From the observations of others, and a careful analysis of my own cases, it appears that a rational pathological and clinical classification in appendicitis might be made as follows:

1. Acute perforating, fulminating appendicitis, with general peritonitis.

2. Acute suppurative appendicitis associated with local plastic peritonitis and abscess.

3. Subacute catarrhal appendicitis, obliterating appendicitis, relapsing appendicitis, and appendicular *colic*.

I am not prepared to defend the statement that there are absolutely three distinct conditions as above stated. On the contrary,

all may be regarded as different degrees of one condition, the violence of which is dependent upon the nature of the bacteriological infection and the degree of immunity possessed by the patient. I do not for a moment believe, however, that the inflammation occurring in the appendix possesses any particular or unusual pathological features such as have been attributed to it by some authors.

That the method of invasion of the mucous membrane, and the subsequent lymphatic and circulatory phenomena are identical with similar processes elsewhere in the body, is sustained by abundant proof. Acute perforating, fulminating appendicitis presents at once the most serious type of the disease and one of the greatest dangers to life. The conditions found at operation, however early undertaken, are usually as follows: the appendix itself is either uniformly dark in color, or mottled; its peritoneal surface has lost its glistening appearance; the appendix is thickened and often distended; the mesentery is swollen from circulatory stasis; perforation, if it has not already occurred, is impending. The perforations may be either single, large, or multiple, small. I have obtained appendices of this sort at operations that were practically sieve-like. The general peritoneum is injected; there is a reddish-brown, foul-smelling, enormous exudate into the peritoneal cavity. Paralysis of the intestinal walls occurs at the onset of the disease. Abdominal distention comes on early and is very great. A most important condition is that at no time is there any disposition to localization of the disease; there is no exudation of plastic lymph, at least not sufficient to prevent general infection.

The experimental induction of large quantities of pathogenic organisms gives, pathologicically, precisely similar conditions, and there is no great difference in the manner of infection. In one case the hypodermatic syringe carries the infection; in the other the appendix bursts and distributes it.

The second variety,—appendicitis with perforation, local peritonitis, and abscess,—presents a very different type of disease from the first. The process is much slower, and the degree of bacteriological infection is materially less. When ulceration in the appendix reaches a point where perforation occurs, walls of plastic lymph have already formed a barrier, preventing general peritoneal infection. The small intestines, the mesentery, the omentum, are all attached together by the exudate. This process gives rise to the

dulness and tumor. It precedes, as a rule, the development of abscess, which, if left to itself, either opens externally, dissects upward about the kidney and liver, or empties into the intestines, bladder, vagina, or general peritoneum.

The third class of cases, appendicitis without perforation, is represented by a large group which have been variously characterized as simple catarrhal appendicitis, obliterating appendicitis, and relapsing appendicitis.

There is sufficient evidence to show that all of these conditions are but elements of one condition. The inflammation beginning at the mucous membrane is associated with a catarrhal exudation, sometimes with ulceration, and, under favorable conditions, subsequent cicatrization, followed by stricture and obliteration, or distention depending upon the seat and character of the pathological changes.

A diseased appendix, more especially when the inflammation is subacute, shows little disposition to spontaneous recovery, and is always a menace to the health of the patient. Localized peritonitis and exudation often accompany this slighter form of appendicitis. The induration may remain for many months after the primary condition becomes quiescent.

The age of "grapeseed, cherry, and date-pit cases" is passed. That fiction died hard. Foreign bodies as an etiological factor of appendicitis are very rare. Out of the whole number of cases in which I have done operations, in only one case did I find a foreign body present,—namely, two sugar-coated quinine tablets. In many cases masses of hardened feces were found, simulating cherry-pits and grapeseeds, and which undoubtedly played an important rôle in the induction of the disease.

From a study of the histories of cases, constipation seemed almost uniformly present before the onset of the disease. An overdistended cecum, with the consequent irritation and catarrhal inflammation, presents unusual facilities for inflammation by continuity.

At times conditions, little understood as yet, occur in the intestinal canal, which give rise to infections through the bacillus coli communis. This organism, under favorable conditions, is capable of penetrating the walls of the appendix, and intestines, for that matter, and causing the most virulent inflammatory reaction. In a case of gangrene of the appendix, which was removed early in the disease, pure cultures of this organism were found. Subsequent examina-

tion made in other cases, both of the fulminating and suppurative types, showed uniformly the presence of the colon bacillus. Some years ago, in a case where a supravaginal hysterectomy was done, septic peritonitis very quickly supervened. The source of infection was very obscure. The patient died in thirty hours, presenting all of the characteristics of a profound intoxication. Bacteriological investigations undertaken at that time isolated a bacterium, which, in the light of subsequent knowledge, was identical with the bacillus coli communis. The exudation in that case was hemorrhagic and not plastic. The inflammatory exudation in fulminating appendicitis is identical with it.

The bacillus coli communis is not always found alone. The bacillus pyogenes fetidus is occasionally found associated with it, although its pathological properties have not been clearly established. Other organisms, notably the staphylococcus pyogenes aureus and the streptococcus pyogenes, are found in cases of mixed infection. I found in a very virulent case the diplococcus pneumoniæ associated with the colon bacillus. It is open to considerable doubt whether the ordinary organisms of suppuration are capable of causing an appendicitis. Where the bacillus coli communis becomes virulent its energies are not alone directed against the peritoneum, but also against the intestinal contents. Decomposition fermentation occurs, with the development of poisonous ptomaines and other deleterious animal products, which, when absorbed, produce profound systemic intoxication. In such conditions indican appears in the urine in large quantities. The careful bacteriological examination of the exudate in appendicitis may, under circumstances, furnish a clue to more accurate prognosis.

The diagnosis of appendicitis is said to present no unusual difficulties. Even the laity have pretty clearly defined ideas regarding the symptomatology of appendicitis. It is quite common to be informed by patients that they have appendicitis. Yet errors of diagnosis are being made constantly. It is mistaken for intestinal colic, peritonitis, intestinal obstruction, typhoid fever, pelvic peritonitis, salpingitis, impaction of the cecum, perforation of the colon, biliary colic, psoas abscess, cancer or tuberculosis of the cecum, and dilatation of the ureter. This is a rather formidable list of errors, many of which are hardly excusable. Blunders are much less frequent than formerly. Many are directly traceable to carelessness

upon the part of the practitioner—to neglect in making physical examinations in suspected cases. It cannot be too often repeated, that every abdominal trouble requires as careful examination as do the diseases of the chest.

Some antiquated notions, pathological in character, concerning peritonitis and typhlitis, are stumbling-blocks in the way of many. The more acute types of appendicitis are very often called idiopathic peritonitis. The intestinal obstruction due to intestinal paralysis, associated with fulminating appendicitis, is often taken to be the major condition. The more involved the understanding of the pathological process is, the greater the danger of error.

The study of temperature in relation to intra-abdominal inflammation has been productive. There are few practitioners who place any reliance upon it for diagnostic purposes. Temperature can safely be eliminated as a source of positive error.

The pulse has been neglected in the clinical study of appendicitis. It is not only the rate that is important, but the character. There is an uncertainty about the pulse, a condition that tells you that, although it is but ninety now, in a few hours it will be a hundred and twenty, or more. In a cursory examination this is not always revealed.

It is a mistaken notion that perforation of any part of the intestinal tube is followed by an immediate increase in the pulse-rate. I have been able to demonstrate that after extensive perforations the effect on the pulse was not shown for twelve hours.

The so-called "McBurney point" has been a source of much error. It has been taken in too strict a sense. Its position has been too limited. The chief value of its discovery remains where the term is meant to indicate the point of greatest tenderness. McBurney's point may be at the left of the umbilicus, over the bladder, deep in the pelvis, or far back in the loins, its position depending upon the anatomical relations of the vermiform appendix to the cecum. That the cecum and appendix may be entirely to the left of the umbilicus is not to be forgotten.

Another source of misfortune in the management of appendicitis is the general belief that the presence of a tumor is necessary to a diagnosis or an indication for operation. The very contrary is true. Tumor is practically no part of fulminating appendicitis There is nothing to make it—no exudation of plastic lymph, or circumscribed effusion, yet we have the most dangerous type of the disease

with which to contend. With another class of physicians the presence of a tumor is looked upon as a favorable sign, an indication that the case will recover without operation. While this belief is not so dangerous as the preceding one, yet it leads often to as disastrous consequences through the formation of widely dissecting abscesses, which finally burst into the peritoneum, the intestines, the pleura, or form great suppurating cavities between the diaphragm and the liver.

The occurrence of pyemia, with secondary abscesses in liver and spleen and lungs, is frequent. These are all consequences of the beneficence of the development of tumor in appendicitis.

The absence of dulness in the right iliac fossa is, in the opinion of many, yet another cardinal indication for non-interference in appendicitis. From what has already been said, dulness is not present in fulminating appendicitis. I have opened large abscesses in the right iliac fossa, over which resonance was tympanitic, the absence of dulness being due to the presence of gas in the abscess cavity. This condition is often very perplexing.

What are the indications for operation in appendicitis? Even now, with all our accumulated experience, it would be very difficult to formulate any very precise indications for operation which would be satisfactory to any great number of operators. Were we to assume the extreme position advocated by some, that is, appendicitis being diagnosticated, operate at once, much antagonism would be aroused, not only in the profession but in the community. Action on this belief has already brought surgery into disrepute in many localities. The abdominal cavity has been opened, patients have been subjected to dangers and loss of time, only to find healthy appendices. It is easy enough to dismiss the matter by saying, "but it will not occur in the practice of careful and experienced surgeons;" yet it is in their hands that it has occurred. Diagnosis is no more infallible here than elsewhere. Again, there is a larger percentage of cases of appendicitis which recover without operation, from the attack at least. A precise estimate of proportion of the cases recovering without operation cannot be definitely made, owing to insufficient data. However, 30 per cent. would seem a conservative estimate. It is not intended to convey the idea that 30 per cent. of the cases will permanently recover, but that they recover from the first attack. In a large number of these cases opera-

tions will be indicated during the quiescent period or between attacks.

Another subsidiary question assumes importance: when is the most favorable time for operation in appendicitis? There can be no doubt that very early operations terminate most favorably, operations done before perforation has occurred or before there is an abundant exudation of plastic lymph.

The question cannot be answered without division.

In cases of fulminating appendicitis the necessity for operation is absolute; there is no hope of recovery without it. The earliest moment at which the malignancy of this type of the disease shows itself is the time when the operation should be performed. A few hours will turn the tide against the patient—perforation is impending, or has just occurred; it may be only two hours after the onset of the first symptoms. If you wait until the following morning, the favorable moment for operation has passed. Briefly, malignant appendicitis is to be treated on precisely the same lines as penetrating wounds of the abdomen involving the viscera.

Owing to the mistaken notion that perforation rarely occurs before the third day of the disease, many cases are allowed to drift into a hopeless condition before a surgeon is called or an operation advised. Operations undertaken when the extremities are cold and bathed in a clammy perspiration, the face drawn, the expression anxious, the respirations hurried and shallow, the pulse rapid, 120 to 160, and uncertain, very rarely reflect much credit upon surgery or enhance the reputation of the operator. Yet there are a few cases presenting, perhaps, slightly less severe conditions, that can be saved by operations; and surgery is bound to give them the chance. Naturally the surgeon must be guided by his own experience and the circumstances by which he is surrounded in deciding in which of these cases he will attempt an operation. As a general rule, few cases of fulminating appendicitis will recover from operations undertaken after the second day from the onset of the disease.

The second group of cases, suppurative appendicitis with localized plastic peritonitis, requires less active measures in their management. The indications for immediate surgical relief are not so imperative as has been already indicated, the inflammatory process is less active, the peritonitis is plastic and local, correspondingly more safe for the patient. Perforation occurs later, and is not associated with as dis-

astrous consequences. The development of an increasing tumor, the onset of abdominal distention, distinct rise in temperature, continuing over 101.5° F., with or without chill, increased pulse-rate, over 100 per minute, are a group of symptoms which indicate operative interference.

The error is often made in delaying too long operations where there is localized abscess. I have histories of two cases at least where secondary rupture of a large abscess into the general peritoneum occurred, and was followed by death. In one the physician was making a physical examination, when at once the patient had a great increase in pain; the tumor disappeared, and a condition of collapse immediately supervened, followed by death in a few hours. In another case the child turned suddenly in bed, was seized with agonizing pain, declared to his mother that he felt something running in his abdomen, became collapsed, and was dead in two hours. An immediate autopsy showed that the abscess wall had ruptured and allowed a pint or more of pus to enter the general peritoneum.

Rupture of these abscesses into the rectum, or other portions of the intestinal canal, is not always followed by the favorable results which have been reported. I have in mind a case in which a large appendicular abscess opened into the rectum. There was no disposition to obliteration, the fever and septic conditions continuing, although the cavity was drained from above. After many months of defective drainage and septic absorption, the patient died.

Abscesses situated in the loin and about the liver are late complications of neglected appendicular abscess. At how early a period may localized suppurative appendicitis demand active surgical intervention? Rarely before the third day of the disease. I have opened abscesses containing a pint of pus on the fourth day.

The third group of cases, subacute appendicitis, relapsing appendicitis, obliterating appendicitis, catarrhal appendicitis, appendicular colic (Tolman), constitute a class which present no imperative indications for operation during the first attack. Many of them are susceptible of cure by purely dietetic and medicinal measures. The relief of constipation and a suitable dietary have permanently relieved a large proportion of these cases. It is in these cases that "operation between attacks" is indicated. Where, after a suitable trial of medicinal treatment, the symptoms do not distinctly subside,

where slight discrepancies are followed by exacerbation in the symptoms, or they become threatening, the operation does not remain one of election, but becomes one of necessity, if the usefulness of the patient is to be taken into consideration. Operations under these conditions are to be urged with great earnestness. There is a general impression in the minds of the laity, and some of the medical profession as well, that the operative treatment of appendicitis is much more successful than it really is, and that death from appendicitis will be rare, if it occurs at all, when cases are properly treated. This impression has had its origin, no doubt, in highly colored popular medical literature disseminated through the daily press, and in the enthusiastic statements made by surgeons of peculiar and unusual experience in the treatment of this disease. There is a whole group of cases in which the mortality will be very great. In many of the cases perforation into the general peritoneum will have occurred before medical attendance is summoned. In order to obtain any material number of recoveries it will be necessary to operate a few hours before the patient makes his first complaint. Take him out of his office, away from his club, or out of his home; assure him: "To-morrow, sir, your appendix will perforate, you must have it removed now." Probably the difficulties in the way of the surgeon knowing these things has not occurred to the mind of the enthusiast. When operations are undertaken before perforation the patients do not always recover. There are limitations even in good surgery. The technically correct removal of the unperforated appendix will not always stop the invasion of the general peritoneum by pyogenic organisms. Under the most favorable conditions a considerable death-rate is to be expected. The development of ptomaines within the intestines and the appearance of indican in the urine often occur, leading to severe types of autoinfection.

If perforation has already occurred, there are many surgeons who advise that no operation be undertaken. My experience has been such, however, that I am willing to undertake an operation in selected cases, and I have seen recovery follow such operations.

In suppurative appendicitis with local plastic peritonitis most excellent results are bound to follow the intelligent management of the condition. In the hands of skilful operators the mortality will not be above 15 per cent., and it may be confidently predicted that

as conditions are more carefully appreciated by the general practitioner this mortality will be materially reduced.

Operations done between attacks, or for subacute appendicitis, present the most favorable results. The mortality will hardly reach 8 per cent. A large number of operators have published series of cases operated upon without a death.

The surgery of the vermiform appendix is for the most part emergency surgery. One does not have much time for reflection or the arrangement of the details of operation. Your assistants are often without special surgical training. Your operating-room is often a bed-room or kitchen, the table improvised. Your light a kerosene lamp; conditions are such that the patient must be operated upon in his own home if at all. Time does not allow any full description of the organization of an operation under such conditions. Every surgeon has, I take it, an operating-case containing the necessary instruments, dressings, operating-gowns, and accessories required in doing an aseptic abdominal section. A full-sized dress-suit case is amply sufficient to contain all that will be required. Many surgeons are in the habit of having furniture removed from rooms before undertaking operations. One woman can set astir more dust and germs in a room in five minutes than will settle in two hours. Where too much damage is not involved, the room can be wetted down with a solution of mercuric chloride. Of course, these considerations will not apply where one has twelve or twenty-four hours in which to prepare for operation. I have done operations under almost every surrounding, and have no cause to regret operations undertaken in private houses, especially where an intelligent trained nurse was in charge of the after-treatment. The technique of the operation is necessarily subject to many modifications. For fulminating appendicitis a free incision along the outer border of the right rectus abdominalis muscle seems most satisfactory. Great care is necessary in isolating and removing the distended and gangrenous appendix. Its rupture is a great misfortune. To my mind the invagination into the cecum is not absolutely necessary, although desirable. Where a rapid operation is not demanded by the condition of the patient, stumps should always be buried by Lembert sutures. If perforation has already occurred, the removal of the appendix is followed by a thorough cleansing of the abdominal cavity. Theoretical conditions aside, flushing with hot normal salt

solution seems the most eligible means to the end. All cases where perforation has occurred should be freely drained. I have drained all cases of this class, and see no reason to regret it. Temporary sutures may be placed, to be tied upon removal of gauze wicks or glass drainage-tubes.

As a surgical procedure, an operation for suppurative appendicitis differs materially from the foregoing one, the most important object being to drain the abscess without infecting the general peritoneum,—a result not always easily accomplished. Anatomical considerations are of great importance. The different anatomical relations of the appendix to the cecum give very different positions to the abscess. For example, an abscess about a long appendix in the southeast position might only be accessible through the rectum or vagina, while one situated in the northwest position, behind the cecum, might be only accessible through the loin. Unless there is edema or marked fluctuation, the incision should be carried laterally as far as possible along the crest of the ilium, or parallel with Poupart's ligament. In some of my earlier operations I exposed my patients to unnecessary danger by making the incision too far toward the median line, finding, as the peritoneum was divided, that the abscess was not adherent to the anterior abdominal wall, and that its drainage involved the infection of healthy peritoneum. This serious disadvantage is easily avoided. By making the incision usually employed for the ligation of the common iliac artery, and lifting forward the peritoneum from the iliac fossa, the abscess may be easily reached without seriously disturbing the protecting adhesions. The removal of the appendix in these cases is only to be undertaken with great circumspection. It is usually so imbedded in the wall of the abscess cavity that it can only be removed by establishing a communication with the general peritoneum, or endangering the integrity of the ureter or the great iliac vessels. It seldom gives further trouble; out of twenty cases occurring after operation without removal of the appendix, in only two cases was there any subsequent irritation from it. There would be a much more favorable time for its removal after the more acute inflammatory action has subsided.

The utmost gentleness is always to be employed in intra-abdominal manipulations in these cases. Abundant provision for drainage is necessary, and every precaution must be taken to pre-

vent the formation of pockets behind the cecum and in the pelvis. The use of the gauze tampon will often produce very favorable results. Exact suture of the wound is impossible.

The lateral incision presents another important advantage. It is so situated that the scar is relieved from pressure, and hernia is much less likely to follow. I am aware that this incision is practically a return to that advocated by Dr. Willard Parker, but with a different purpose. Dr. Parker employed it to keep out of the peritoneal cavity, while it is now employed to get into it.

The technique of the operation for relapsing appendicitis is sufficiently settled, and may be summarized very briefly: absolute asepsis, short incision, removal of appendix, with inversion and burial of stump in the cecum with Lembert sutures, drying the field of operation, closing the wound with silkworm-gut and buried sutures of catgut or kangaroo tendon, uniting peritoneum, fascia, and muscle, with no drainage.

In all I have collected the notes of eighty-four cases, which I have seen between the years 1889 and 1894. By far the greater number of them have been seen in their homes, scattered over a rather wide territory. Most of the operations have been performed in private houses, and the cases have been left in charge of the family physician. Every case has been entered in the table, regardless of the results, and no attempt has been made to select cases for operation. I have operated upon some cases in which the chances of success were very small, and once, at least, a patient has recovered when in a most serious condition. Such cases are not good for a favorable statistical showing, but present themselves, and must be treated.

During the last two years cases have been seen earlier, and fewer operations have been required in the so-called neglected cases. Consequently the mortality has been greatly reduced.

Cases treated by operation.	Cases.	Recovery.	Deaths.
Acute fulminating appendicitis . . .	21	8	13
Acute suppurating appendicitis . . .	28	20	8
Subacute appendicitis (relapsing appendicitis)	3	3	0
Whole number treated by operation .	52	31	21

The mortality following operations was:

In fulminating appendicitis	62 per cent.
In suppurating appendicitis	28.5 "
In subacute appendicitis	00.0 "
In all forms	40 "

The mortality in cases of fulminating appendicitis not treated by operation was (6 cases) 100 per cent.

The mortality in cases where indications for operation were absent or obscure was (26 cases, 2 deaths) 7.8 per cent.

In a number of cases not treated by operation the diagnosis was provisional in many cases. Doubtless impaction of the cecum was the real condition.

Causes of Death following Operations.

Shock (operations done in general peritonitis)	7
Peritonitis (sepsis, continued)	8
Laceration of the ureter	1
Prolapse of the intestines into the wound	1
Obstruction of the bowels	2

Remote Results of Adhesions.

Exhaustion from prolonged septic processes	2

Causes of Death in Cases Not Treated by Operation.

Septic peritonitis	6
Abscesses of the liver	1
Unknown	1
Total	29

SURGICAL APPENDICITIS.

By JOSEPH HOFFMAN, M.D.,
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Pus in the abdominal and pelvic cavities has been treated and considered with far more leniency than pus anywhere else in the human economy. It is the tramp manifestation of all disease. Like death, it has all times and seasons and places for its own, and, too often like sleep, is the twin sister of death. Other diseases and disorders have manifestations each peculiar to itself, but pus may be the product or resultant of every disease, widely speaking. It was long before this was a recognized fact in reference to the abdominal cavity. Women died with pints of pus bathing and laving their viscera, without its presence ever having been suspected, and idiopathic peritonitis had the sovereign sway in death-certificates and in pathology. Once it was discovered that pus might get into the abdominal and pelvic cavities, then the wise men in physic began to discover reasons why it ought to get out of itself, just as it got in, and the let-alone doctrine held sway, with opium and poultices for its viceroys. This now is passed away, let us thank heaven and aggressive surgery, and we are no longer expected to reverence pus in the closed cavities of the body any more than in the external surgical anatomy.

But the general manifestations of pus are not here to be considered, except incidentally, and we will consider briefly the various organs in which pus makes its appearance below the diaphragm. In the order of its probable frequency may be mentioned the kidneys, appendix vermiformis, tubes and ovaries, liver, pancreas, and spleen. In the kidneys its symptomatology is different, according to the cause. If from a stone in the pelvis of the organ, the usual manifestations of pain and renal colic are present previous to suppuration, while if the origin is from the urinary tract, by the trans-

mission of purulent matter up through the bladder along the ureters, at last reaching the kidney, there is a previous history either of venereal disease, cystitis from some cause, enlarged prostate, with retention, or chronic cystitis from stone and suppuration. Either one of these causes has a perfectly distinct history, and the treatment, with the exception of the removal of the stone from the kidney, is identical.

If there is pus in the liver, we are often left to surmise it, though the exploring needle is a safe means of diagnosis. We have to remember that abscess of this organ seems to be a sequel of operations upon the rectum. The general history of rigors, muddy complexion, and enlargement is to be taken into consideration. And the diagnosis is made up rather by the combination of all the symptoms than by any one set in particular. If the abscess goes on to rupture into the peritoneal cavity, operation can only give the slightest chance of success unless done at once. So also into the other cavities, the pleura and pericardium. It must also be remembered that abscess of the liver may simulate the same disease of the kidney, and that disease of the latter organ has been mistaken for that of the former. The presence of abscess of the spleen, as well as of the pancreas, is so rare that diagnostic features are wanting except in a general way. The nature of the organs is such that when abscess is present it must soon make its way into the peritoneal cavity, and then, from the symptoms of peritonitis as they exist under other circumstances, operation will be indicated and begun most probably as an exploration, ending with the removal of the offending organ. Pus as a foreign element is most common in the pelvic organs. Appendicitis, as I have indicated, is a most frequent cause of the trouble, and, alongside of tubal and ovarian disease, is the most prolific of causes. The diagnosis of pus as a concomitant of appendicitis is not always an easy matter. Not every appendicitis, so-called, is one, and accordingly there is often no pus present, because, aside from pain, there is no real anatomical lesion, unless a little local irritation, due to peritoneal irritation from tension, revolution of the cecum, and the like.

What we must chiefly consider is the history of recurrent attacks of the disease. When these take place, one after another, there is usually some real lesion at the bottom of the difficulty, and, along

with rigors, rise of temperature, or collapse, if there is rupture into the peritoneal cavity, a diagnosis of pus may be made.

In the pelvis proper, as is well known, pus is found most frequently in the tubes and ovaries, in dermoid cysts undergoing suppuration, and as a result of fibroid degeneration. This latter may give rise to abdominal pus collections. When we have had pus in the ovary, uterus, or tubes, of course it is evident that it may infect all other organs with which these come in contact. Hence, in pus tubes and suppurating fibroids it is no unusual thing to find pus in the mesentery, to find the bowels gangrenous, and, indeed, to find the uterus also in the same condition from the spreading of the infection along the tubes into the cornua. Abscess in the pelvic tissue itself, by reason of the contiguity of leaking tubes, is a common affair, and when this condition is present we must be careful how any of the less radical means of relief of the trouble are relied upon.

Suppurating dermoid cysts are to be recognized by history of long-continued trouble, by pain, and finally by all these with either the localized fluctuation of suppuration or the evidence of the absorption of pus as we all so well know it. Dermoid cysts may be considered the earliest of all neoplasms to give trouble, so if there is combined a history of early trouble, growing worse, and in addition taking on a history which points to pus, a growth of this sort may be suspected. In the ovarian and tubal origin of pus we must go back in our history for the origin of the disease. History of each case is most important, for we must remember that pus may be present where there is not the least symptom of it, for, when localized and out of the way of general absorption, the toleration of the economy for pus is astonishing. Unless we have a clear history that pregnancy is absent, the lateral mass or masses of pus deposit may be taken for ectopic pregnancy, for it is no uncommon thing to find ectopic pregnancy and pus combined, for the latter sometimes is beyond doubt at the bottom of the former condition. A suppurating ectopic pregnancyhas, in no small proportion of cases, to be explained by the previous presence of pus in the tube. This fact will alone determine why some pregnancies are suppurative while others are not. These remarks are to this condition a hint of its pathology, just as I can here refer to the pathology in some other conditions. For instance, suppurating peritonitis has its origin in leakage from some one of the organs under consideration. Hence,

when we have symptoms of this disease there is no use looking and wondering and waiting for the mystery to clear up, seeing that so many causes may give rise to it; but the business of the surgeon is to go straight for the peritonitis, find its cause, and deal with the matter directly.

In appendicitis, gunshot wounds, and ectopic pregnancy, late or early, the treatment should be recognized as identical. In all these conditions there are causes for the production of pus, there are reasons for the presence of pus and for the suspicion of it, to hold the operator ready for surgical interference at once when he is summoned into the presence of these calamities. In a late paper I noticed with a good deal of interest how Epsom salt and rest would cure appendicitis. Let us not be deceived. Epsom salt never cured a peritonitis nor an appendicitis. Where these exist in reality, Epsom salt is just as inefficient for their cure as lens for blindness. It is true we expect results so far as to help the bowel rid itself of flatus, and to help the removal of the natural products of inflammation; but this is all, and it is impossible to claim curative results for these agents. Looking at gunshot wounds, we have a lesion where all surroundings favor the formation of pus, just as in appendicitis. In fact, we may consider a wound of the gut by bullet or stab as a fulminant attack of appendicitis. It is on all sides confessed that in the explosive appendicitis a fatal result is to be expected unless operation is done at once. This being acknowledged, the same must be claimed for wounds of the intestine, allowing escape of feces into the peritoneal cavity.

The history of the cases is that where one escapes without suppuration, where no effort is made to save the patient, a vast number do not. So it is in recurrent attacks of appendicitis. Those who have most studied the condition, who have watched patients said to have recovered, know that in a great majority of instances they finally go into other hands, and either die in an attack or escape by operation. Operation in these forlorn cases has its justification only in the hope that a saving chance is offered an otherwise necessarily hopeless case.

Looking over the various conditions already named, it is evident that the diagnosis of free pus, or of acute attacks of peritonitis due to local irritation from pus, is a question of experience and of the fact that we are looking for such conditions. Heretofore

much of the symptomatology which we now consider as pointing directly to the presence of pus was attributed to para- and perimetritis. What we have to remember now is that these conditions on the operating-table have practically no existence; that operators of the widest experience do not find them; that pus in the pelvis, aside from tubal inflammation and appendicitis, is a rare occurrence, and that the reports of its being so found come from a scanty experience, and that after the first report the operator is not apt to make a second. These facts then must be conceded, if we are to take an operative experience as worth anything, and in surgery such experience is what post-mortem examinations are to pathology and dissections to anatomy. We must make this a starting-point for diagnosis, reasoning from what has been found from a clinical and operative standpoint to be the chief cause of these troubles, remembering what is secondary to them, and finally considering the very great frequency with which pus is found as a final or as an initial symptom of several varieties of pelvic disease. In this light a previous history of gonorrhea, of inflammation of the glands of Bartholini, of abortion neglected, or of miscarriage carelessly managed, of difficult and dirty delivery, instrumental or otherwise, with the after-history of pain, discomfort, tenderness on motion, or shock of fall or stumble, with progressive loss of weight and exaggeration of previous symptoms, with recurrent attacks of pain, or it may be with pain followed by discharge, for a periodic unloading of a distended tube through the uterus is not an unusual occurrence; all this points to present pus, or to an old peritonitis, attended and made worse by acute exacerbations. Here it must be again recalled that lung symptoms, with all that this implies, may have their rise and storehouse in purulent inflammations of the pelvis. More than one case in the experience of every operator of wide experience can here be recalled, and is food profitable for thought. And in the same line, case after case occurs where the lung symptoms are either cured or held in abeyance by removal of the source of infection in the pelvis. Aside from the physiological manifestations of pus, examination can tell us much as to the nature of the disease. Pain simply without discoverable lesion may mean much or little, and it is best to watch these cases carefully before resorting to operation. The discovery of a boggy, sensitive swelling, lateral, posterior, or behind the uterus, but connected with it, or separated by a sulcus, is diagnostic

of tubal trouble, and when this exists disease and implication of the ovary, if not present, are hard-by symptoms. Sometimes, indeed, the disease has so far advanced that the tube, uterus, and ovary are all fused, and when this is the case the diagnosis is next to impossible. I have in my possession a specimen which I thought, previous to operation, was a fibroid of the uterus, and started with the intention of removing the uterus, when, to my astonishment, and I may say delight, I found that the uterus was covered behind, atop, around, by tubes, ovaries, and inflammatory bowel adhesions, all of which careful manipulation removed and revealed a normal uterus. From a clinical standpoint this case is remarkable in that the presence of pus gave none of its characteristic symptoms except pain. There was excessive hemorrhage, but this cannot be put down as a sure sign of anything. Another condition that is most misleading in my experience, so far as diagnosis is concerned, is miliary disease of the tube and ovary. The symptoms here point to pus. The lateral fulness with pain points to pus. The rise of temperature, the irregular and painful menstruation, the hectic, all seem to indicate the condition, and operation alone discloses the fact that we are in error. In another paper I have called attention to the symptomatology of this same condition as compared with ectopic pregnancy in its earlier stages, and I can do no better than here again refer to it. We must remember that pregnancy, whether intra- or extra-uterine, is not the only condition that causes enlargement, swelling, and softening of the uterus. All these conditions are simulated by totally variant causes having nothing at all to do with gestation in any form. If now we go on to the other recognized symptoms, such as suppression of the menses, irregular periods, nausea, swelling of the breasts, we shall find that all of these are simulated by miliary disease of the ovary, and that in addition there is here an ectopic swelling, lateral or retro-uterine, with tenderness and throbbing, totally misleading except in the unmarried, while in other cases only the probability is diminished and the diagnosis is not certain.

In these cases, too, another misleading feature is the uterine discharge, for this is so irregular it will be impossible for the most careful observer to decide positively whether the decidua has been expelled or not. To cap all, the temperature is misleading. Nor is this the only perplexity, for the size, softness, and appearance of the uterine structure all suggest pregnancy. Running parallel with these symp-

toms are those of the stomach, than which nothing can be more capricious; and taken together with the frequent abdominal tenderness, often amounting to well-developed attacks of peritonitis, the symptomatology of ectopic gestation is so near complete that nothing farther in the majority of cases would suggest itself. If this is apparently out of the scope of the paper here presented, my only excuse is that to call attention to the fact that these three conditions, so often found in abdominal surgery, frequently simulate each other, will be of positive advantage to the operator and diagnostician to remember, not only from the standpoint of differentiation, but also from a salvation point of view, so far as the patient is considered. All three of the conditions are in the fullest sense operative conditions, so that no matter whether or not a positive conclusion is reached, whether one or the other of the trinity here referred to is present, the mode of procedure is still the same, and the operation, if promptly done, is the only step to be considered. Now, as to the treatment of pus when it is discovered, or, as to exploration for it if it is suspected, there is, apparently, still a great deal to be learned.

Many operators, or those who claim to be, look to the radical cure by anticipating an operation or procedure which is simply meddlesome interferenee. Considering that the uterus is the starting-point of the pus-infection, they anticipate the clearing out of the tubes and ovaries, when infected, by the curetting of the uterus. This idea is worthy of as little sound consideration, no matter by whom advanced, as the vagaries of a madhouse brain. It has no common sense to originate it; it has not a surgical argument to support it. If our firemen were to insist on pouring water into a cellar because a conflagration originated there, paying no heed to the spread of the ruin along the roofs from house to house, if they insisted, because there was already trouble and blaze above, they might still add fuel to the fire in the cellar, we would label them either as incendiaries, or idiots, or madmen. They would be stopped, compelled to lay aside their uniforms and get out of the service. Well, the surgical service of a long-suffering race of women needs some such police regulation to protect them from surgery which has no better sense or justification than all this. Attacking a disease which is killing above because it originated below is a quid of the experimental surgeon with a few cases and less experience, who, because

he may succeed in a case or two, divines his luck as genius, and straightway rushes into print with his experience, and deceives the reading world, the young man who has aspirations as a surgeon, who, in his turn, practising on the faith that employs him, deceives it and disappoints himself.

Gentlemen of this Section, before you are satisfied to follow self-praise and adulation, see to it that it has something better back of it than breath.

We are to remember in this connection that in the presence of pelvic disease of an inflammatory type the slightest irritation may start up the severest exacerbation of the disorder. Here comes in our positive injunction: in the presence of pelvic inflammation be careful of instrumental examination; even digital hot-water douches at or near the menstrual period may increase the pain. Sometimes they are not even endurable at any time. This being the fact, how much less from a safe standpoint ought any surgical interference to be considered? Apart from mere irritation, surgical interference is to be avoided except for the radical removal of the trouble. Manipulation from below is likely, even in the most skilful hands, to rupture adhesions, or, worse still, the inflammatory sac, and a general peritonitis may start up by such a rupture. This we frequently find the case where there has been pus previous to labor.

The treatment of the lower organs, if necessary, is best originated after the absolute removal of the upper disease. After this has been done the peritoneal cavity is shut off from the uterine, and any cleansing and relieving of this organ can have only a secondary influence, not a primary inflammatory effect on the peritoneal cavity. The rule to be laid down for the relief of pus in the abdomen is to get at the point of suppuration, the cause, and remove it. If this is impossible, as it is in some cases of appendicitis, and the peritoneal cavity is shut off by adhesions, the evacuation of the pus by incision over the abscess is the best procedure to save the life of the patient, and that is all we are after. If the patient is in condition to find and remove the appendix, so much the better, but the best thing is to work so that the life is saved. In appendicitis we have one of the most trying operations in surgery, for the simple reason that the relation of the parts is not constant, and he who operates expecting to find the appendix by McBurney's or any other point will be wofully disappointed. In the presence of pus

in the pelvis, apart from the appendix, when the ovaries and tubes are involved, the best operation is by all odds the complete one. Remove the offending organs, and these in the great majority of cases can be removed by the experienced hand. If the hand is not experienced, it had better be out of the case.

Irrigation and drainage, which I will not in detail read at this time, is the after-treatment. In general peritonitis, when the whole abdominal cavity is filled with pus, the rule is the same: wash out and drain. There has been a dispute as to the possibility of saving cases of general purulent peritonitis, but chiefly from the book operators and men who have only their own little experience and the denials of the Germans to traffic upon. What we do know is that general puerperal peritonitis will kill, and that when it is diagnosticated we have nothing left to do but try to save the patient.

This has been done by Price and Ross, of our Society, and I myself have assisted in an operation of the same sort, in which I literally scooped out the pus by my double hands as a ladle. Irrigation and drainage as the after-treatment saved the life of the woman. There is little use of arguing that the whole peritoneal cavity was or was not invaded. Some little crack or crevice may have escaped, but this does not alter the fact that the general peritoneal cavity was invaded. The use of disinfecting fluids cannot be urged as a surgical necessity in these operations. Peroxide of hydrogen or boric acid may be used, but the washing by quantities of water seems to dilute the pus past the power of poisonous irritation, and the most virulent cases seem to recover most readily. Whether the heat, dilution, or the absolute removal is responsible for the negation of the poison does not much matter. Suffice to say that the irrigation is the *sine qua non* of success in these cases. A word as to drainage.

In the presence of hemorrhage, gauze packing or sponge packing is a valuable aid in controlling the blood. In the presence of pus gauze packing is to be deprecated, unless to shut off the peritoneal cavity from spots of or foci of infection. In these cases it is only to be used if we are satisfied that there is more risk without it than with it. As a routine procedure it is to be deprecated. Gauze will not drain pus, it will only hold it in. Mikulicz's pack is not to be held as a temple of refuge that will save every patient upon whom it is used.

Treat each case according to the demands it makes, according to

its complications. There is no use in doing an ideal operation and have the patient dead when it is over. Ideal work is that which gives the best result in the line for which it is done. Surgery of the abdomen is a work of self-denial, of trial, of unexpected complications and lurking disaster. The best can rise equal to it who has for his motto: "Nothing but for the good of her who trusts me." Self-seeking carelessness of lives has its place in the carnage of internecine strife, not in the shadowy sorrows of suffering humanity, of dying women.

DISCUSSION.

DR. ROBERT T. MORRIS, of New York.—MR. PRESIDENT, I am not inclined to say much this evening on the subject of appendicitis. Most of you are familiar with what I have said and written on the subject from time to time. I will say, however, that I am opposed to the idea of classification of cases as men classify them today. Any man of a scientific turn of mind craves classification. Most men who have been trying to classify cases of appendicitis, however, have classified them from ultimate symptoms. I believe appendicitis is an infective, exudative inflammation of the appendix vermiformis. I believe, furthermore, that classifications can be elaborated to the extent of one's knowledge of the English language, so that eventually a man who is well qualified in the use of this language will have a separate name for each symptom as it appears, and can place it as a case of this or that sort. There is no natural elaborate classification of this disease, but simply an artificial one that each man will present for adoption, but it will not be adopted eventually by others, because it is artificial.

Mistakes in diagnosis. I think men who are engaged in making diagnoses of appendicitis very seldom make a mistake. I have had occasion, as you know, to see a good many cases of this disease, and have removed a good many appendixes, but I do not profess to have more diagnostic acumen than my *confrères*. I have been misled in two cases of tuberculosis of the peritoneum, and in another of carcinoma of the appendix. In another case, a year or two after an attack of typhoid fever, I removed a normal appendix from among adhesions which I believed had been caused by a chronic appendicitis. These are the only cases in which I have been deceived, and I think very few men who are accustomed to see these cases will be misled, except occasionally, by a case of tuberculosis or carcinoma of the appendix, or by a case

in which we have septic disease of a tube or ovary, with the appendix adherent to these structures.

As to the analysis of foreign bodies, it is quite true we do not often find cherryseeds and various other seeds in the lumen of the appendix. I have had a pretty large collection of specimens analyzed and examined carefully, and I find more frequently than anything else calculi consisting of calcium phosphate and a little inspissated fecal matter and fat. The proportion of fat was large in some specimens. It is rather difficult to account for this proportion of fat, especially as some of the concretions were large. As the lumen of the appendix was cut off from that of the cecum, it occurred to me that possibly it might be due to retrograde metamorphosis of the lymphoid cells of the appendix. On determining the amount of fat in the lymphoid coats, it was found that the proportion was eight and a fraction per cent. normally. Three appendices were examined with small ulcerating spots, and the proportion was 19 per cent. of fat. Three others were examined, in which the interior coat was ulcerating, and 26 per cent. of fat was found, showing the very large amount of fat that was being produced by slow ulceration as a result of retrograde change in the lymphoid cells in the chronic ulcerative cases. In a large proportion of cases we find a slow ulcerative process going on, because the tissues are exposed to the bacteria of suppuration, not necessarily in the tissues, but in the lumen of the appendix.

With reference to the question as to whether we had better separate adhesions, this had better be determined by the operator himself who knows the results following this technique. Every man in surgery is a law unto himself. If I were to practise drainage as Dr. Price practises it, I could not obtain the results that he does. But, personally, I separate the adhesions in almost every case of appendicitis upon which I operate. I do this in searching for other collections of pus. I do it to separate loops of bowel held in bad position by adhesions which would strangulate the bowel, and I prevent readhesion in a bad position. I believe that can be done, but it would be unsafe to teach it. I would not dare teach this doctrine, but I would do it myself. I believe it is the correct thing for the trained surgeon to do.

Dr. Joseph Price, of Philadelphia.—The remarks of Dr. Morris to which we have just listened, on appendicitis, are the best I have ever heard, and his closing words are quite sufficient. We may all go home without any further discussion on the subject. I agree with him excepting in one point, and that is, what he dares to teach and what he would do himself in these cases, and to fortify and emphasize that point

I will simply allude to the statistics of one of the papers. For instance, in speaking of the separation of adhesions and delivering the appendix, or in alluding to the recurrent cases, the author, I believe, gives two fatal cases in twenty, or 10 per cent. That of itself should be a sufficient argument for surgeons to follow the practice advocated by Dr. Morris, of completing all operations, removing the cheesy, disorganized appendix, and freeing all adhesions. I am sorry Dr. Morris does not stand out and insist upon others doing just what he can and does do successfully.

I will allude very briefly to the carelessness of surgery. A short time ago a patient died in the Pennsylvania Hospital. Dr. Morton insisted on a section for appendicitis, but several other physicians did not agree with him. At the autopsy, in searching for the appendix a huge abscess was found about it, and the appendix itself was necrotic. Even at post-mortems some practitioners do not find the diseased appendix, and they are at a loss to know what killed their patients. This has been so for many years. I have had a large experience in dealing with recurrent cases of appendicitis that have been recognized by a number of intelligent physicians in the Adirondacks, in Europe, and various watering-places, who insisted upon having the appendices removed. Some of the cases have come to Philadelphia for operation, and I have found the physicians correct in their diagnoses.

Dr. Morris has alluded to foreign bodies, and I am rather inclined to think that the variety of foregn bodies found in the appendix is much greater than is ordinarily supposed. A short time ago a Philadelphia surgeon found a fish-fin in the appendix, and another gentleman found two sugar-coated pills. We know that the cases of appendicitis increase about strawberry and grape season. A few years ago an intelligent gentleman, a man of considerable wealth and leisure, travelled around the world, and had twenty-four attacks of appendicitis in various parts of the world. It is said that he was treated by twenty-four different physicians, and by some declared cured, and in the twenty-fifth attack Dr. Agnew removed the appendix, and the man recovered. I presume that Dr. Morris has a good number of appendices in bottles that have been reported as cured, and are still being reported as such before county, State, and national medical societies. My brother has had fourteen operations for appendicitis without a death. The disease is common. I have operated twice in one physician's family. In one of Hunter McGuire's cases the appendix floated away like driftwood in the pus. Appendicitis is common. Some of the physicians sitting around me at the present time have lost children from the disease. One

of my classmates suffered more or less for ten years from appendicitis with adhesions and chronic obstruction. He continued to suffer, and some of the attacks were horrifying, A Germantown physician sat up with him for years during these attacks and cared for him. He finally died. At the post-mortem bands of adhesions were found bridging the ileum until for six or ten inches it was as small as a penholder, and the appendix was cheesy and disorganized.

A word in regard to cases of purulent peritonitis. The profession for years have thought they were hopeless. Operating for appendicitis, extra-uterine pregnancy, and suppurative peritonitis, is the important and vital work of the future to save lives. Ovariotomy has been settled long ago. Last year hysterectomy was settled. We ought to save these patients. Puriform disease of the ovaries and tubes is a settled question; suppurative peritonitis is as yet a little undecided, but the consensus of opinion is that we ought to save some of these cases with good surgery. Cases of purulent peritonitis ought to be saved, and can be saved, by good surgery. Surgeons must act promptly. We have had a large number of deaths from appendicitis throughout this country. In Boston, New York, Philadelphia, Washington, deaths from the disease have been numerous this summer. In some of the cases, after operating, a piece of gauze has been stuffed in for drainage purposes, and there is a strong suspicion that sepsis followed such operations. If I had a piece of gauze stuffed in my pelvis for twenty-four hours, I should expect to die of sepsis. I do not consider that drainage, but far from it.

Dr. Morris has alluded beautifully to classification and the conditions found by A. on the first day, and B. on the second or third day. If A. should see a case on the second or third day, or still later, say the seventh day, and the patient was dying, he would give it the third classification. Dr. Morris has covered that ground beautifully.

I should feel abundantly compensated for my journey to Toronto simply by listening to the remarks of Dr. Morris alone, and I do not know that I have listened to one who has given me more satisfaction, because his experience so closely hugs my own practice.

Dr. A. H. Cordier, of Kansas City.—It is with some little timidity that I rise to participate in this discussion, after hearing the able remarks of Drs. Morris and Price. I have seen a great deal of Dr. Price's work, and have done a little of this class of work myself, and must beg leave to differ with them in regard to breaking up adhesions in this locality. I wish to call attention to the fact that there is a great deal of difference between pus found in the appendix and that found

in the pelvis. If we accept the theory advanced by Dr. Price, that the majority of cases of pelvic suppurative disease are caused by gonorrhea, we must accept the fact that this is a form of poisoning brought about by the gonococcus of Neisser. It does not invade the peritoneum to the same extent, and it is not so dangerous a micro-organism as the bacillus coli communis. We have a different septic germ in this locality. If we go to work and break up the adhesions in a case of appendicitis that are walled off, we are sure to have a larger mortality than if we simply make an incision, evacuate the pus, clean out the cavity, and introduce rubber drainage in addition to gauze packing. In these cases it is hard to tell when to go ahead and when to stop. In some cases the appendix will float out with the pus at the time of the operation. My results in operating for cases of appendicitis have been extremely satisfactory to me. Where I find them with walled-off abscesses I simply make an incision, evacuate the pus, and drain as in other localities.

I wish to speak now of the symptom—colic. We pay too little attention to colic occurring in the abdomen. A patient presents himself with colic occurring from year to year. It is more significant than we are disposed to think. Two weeks ago I operated on a gentleman for appendicitis, who lost a son three months before without an operation. He presented a history of having had repeated attacks of colic for eighteen years. He said he had never had an attack of appendicitis to his own knowledge. On the morning of the operation I saw him in consultation with his family physician; his temperature and pulse were normal, but he had pain in the region of the appendix, this attack differing from previous ones. Appendicitis was diagnosticated; he was sent to the hospital and I operated on him the next day. I evacuated fully a teacupful of pus, and found a gangrenous appendix.

In regard to foreign bodies, in one case I found a piece of chewing-gum, in another a piece of wax, and in a case from Buffalo I found a cherrystone that the patient had swallowed a week or ten days before that had found its way into the appendix. I found the stone ready to burst open from the moisture and heat, and it had torn a hole in the peritoneum.

Dr. J. B. Murphy, of Chicago.—This controversy on appendicitis has been very animated. The first pathological condition we had to defend was the presence of pus. Almost every general practitioner that discussed the subject of appendicitis would say, "there was no pus in my case, resolution took place, the patient got well." Finally, after careful examinations on the operating-table, it is practically agreed that

in every case of appendicitis there has been, or there is present, pus. What will be the disposition of that pus? We know the way in which nature performs so-called cures of this disease. General practitioners will relate the number of cases they have had without a death. At a meeting in one of the Western States this summer, a practitioner who lived in a hamlet of two or three hundred inhabitants made the statement that he had had sixty-two consecutive recoveries from appendicitis, without operation, in one year. I am quite certain they were not of the variety that come under my observation.

A word with regard to the pathology. We agree that some cases can get well without surgical interference. What cases will we, and what cases will we not, operate on? These are two questions we want answered. There has been an endeavor recently to evade operations on a dangerous variety of appendicitis, *i. e.*, the acute variety. The class of cases we should desire to make a record on in operating is that variety in which the patient's life is jeopardized to the greatest degree. I refer to the acute suppurative variety. This is the variety which should attract the closest attention, if life-saving be our purpose. What shall we do with a patient in his first attack of appendicitis? In his first attack of appendicitis what happens? He has his first symptom either from a perforation, from an invasion with infection of the mucous membrane, which is most common, or from an obliteration. The outcome of these three causes will be almost all the pathological inflammatory conditions that we can imagine in the peritoneal cavity. By the early stage I mean the time when the patient has his first symptoms. At this time we have a disease that is limited to the cavity of the appendix, while a few days later, many times a few hours, it has no limitations, except the boundaries of the peritoneal cavity. What would we do with pus of this dangerous variety elsewhere? We would evacuate it immediately, and endeavor to save the patient's life. When patients have unmistakable symptoms of appendicitis, today, not tomorrow, is the accepted time for operation. The symptoms of the disease are more definite and less liable to mislead the surgeon in the early stage than the symptoms of any one affection that I know of, not excepting pneumonia. Whenever we have a patient with a sudden attack of pain in the abdomen, with nausea and vomiting, increased local tenderness over the seat of the appendix, accompanied by a rise of temperature, we may reasonably conclude that we have a case of appendicitis. There are very few conditions in the abdomen resembling this one. Indeed, the exceptions are so few that we can accept this train of symptoms as our guide, except in diseases of women where there has been a previous history of genito-urinary trouble. But if we have

symptoms on the right side of the abdomen in a woman I think the indications are just as imperative for operation as in appendicitis. As soon as we have the symptoms I have outlined we should at once prepare our patient for operation. We also hear this statement by physicians and surgeons: "I would operate on such and such a case, but I would not operate on this or that case." Let me say here that there is no man who can make a differential diagnosis of the pathological conditions that exist within the abdomen in appendicitis. Take, for example, a case which occurred in my practice. Mr. F., aged nineteen years, was attacked on Saturday morning with sudden pain, nausea, and vomiting; went home and rested a few hours, got up Sunday morning at eight o'clock, and went to a druggist to get something to relieve the "uncomfortable feeling he experienced." A doctor was called, whom he saw for the first time Sunday afternoon at three o'clock, at which time his temperature was 102.5° and pulse 120. The doctor made a diagnosis of appendicitis. What was the condition in the abdomen at four o'clock when I operated? It was full of pus; fecal stones had escaped from the appendix on Sunday morning, and the purulent contents of the appendix escaped into the abdomen. I removed the appendix, and drained the peritoneum in all directions with glass and gauze drain; patient made an uninterrupted recovery. Who could have foreseen the pathological conditions within the abdomen? Until we can make a diagnosis, and say of this individual case that there is such and such a condition in the abdomen, we have no right to say we will not operate on that case. We have no right to say we will wait until tomorrow. We have no right to hold a patient's life in jeopardy when he has unmistakable symptoms of appendicitis, and from the experience and number of cases I have had (189, with mortality of 9.7 per cent.), I should unhesitatingly advise immediate operative interference. When appendicitis is present we cannot say where, how, or when it will end or to where it will lead. If there is any disease to which the expression, "Ubi pus, Ibi evacua," is applicable, it is to appendicitis.

Dr. J. Henry Carstens, of Detroit.—Dr. Murphy has really said everything I wanted to say. I perfectly agree with him, but I must differ from Drs. Morris and Price with reference to one point. There are cases where there is no necessity of cutting down and breaking up adhesions, taking away the appendix, and so on. I am fully in accord with Dr. Cordier, that there is a vast difference between pus from the gonococcus and that which we get from the bacillus coli communis. That is not the only thing. We sometimes have a streptococcus in

there, that is, mixed infection. I desire to emphasize the point brought out by Dr. Murphy, and for which I have been criticised in my own city—namely, that in the present state of our knowledge we cannot always tell whether we have a severe case or a mild one to deal with. Every case of appendicitis ought to be operated on, not tomorrow, not the next day, but this very hour. If this is done, we will not have statistics that give us thirty-one deaths out of fifty cases, but we will have such statistics as Dr. Morris gives, ninety-eight recoveries out of one hundred operations.

Dr. E. W. Cushing, of Boston.—I fully agree with what Drs. Murphy and Carstens have said. I simply wish to call attention to one point in Dr. Peck's paper about a secondary operation for freeing the bowel. I would be glad if the President will see that this point is referred to in the closing remarks, because I think one of the most important things in the whole subject of laparatomy is whether we can do anything for the patient after laparatomy, in relieving bowel obstruction when vomiting is persistent, and the question arises whether we shall open the abdomen again.

Dr. W. E. B. Davis, of Birmingham.—In the discussion Dr. Price very correctly refers to general puriform peritonitis as being the chief danger in appendicitis, and further states that the question in regard to the treatment of appendicitis and tubal disease is settled, and that the only question to decide now is what to do with suppurative peritonitis. The only treatment that can prove successful is to prevent it. When we get general suppurative peritonitis we can do nothing for our patient. We have a general condition of sepsis that will usually kill the patient, even though we could relieve the general suppurative inflammation of the peritoneum. The treatment of purulent peritonitis, therefore, is preventive. It is the only treatment with which we can succeed. Cases have been reported of successful treatment of suppurative peritonitis that were not cases of purulent peritonitis, but were cases where large abscesses had ruptured into the general cavity, and the pus was washed out before there was a general peritonitis which could have produced the pus in the general cavity. It must be borne in mind that the most dangerous form of appendicitis is that which will cause general peritonitis in twelve to twenty-four hours, and it produces the same condition that we get in stab wounds of the intestines. You all recognize the fact that we cannot save many of these cases unless we operate within the first day. After twenty-four hours there is usually but little hope of relief from an operation. The surgeon should take that position in order to hold surgery in good repute, but should give

the patient the benefit of an operation. Hence we must not expect to save many of the cases of appendicitis that most need our help. I refer to cases of fulminating appendicitis, in which death occurs with symptoms of obstruction of the bowel. I am sure it has been the experience of all of you that, in the majority of cases in which you are called upon to operate for obstruction, the diagnosis was incorrect. We find the obstruction due to dynamic causes, to paralysis and inflammation of the bowel, and not to mechanical obstruction. Obstruction of the bowel from mechanical sources is not so common as we were formerly taught. The general practitioner sees the cases of appendicitis first, and as a rule gives opium. They are not seen by the surgeon for two or three days. If we can see our cases of appendicitis on the third or fourth day, we can usually save them, some even as late as the seventh day, because the pus is circumscribed. The surgeon can deal with such cases with a promise of cure. We ought to operate early, but the fact remains that we can save many of the cases when seen late.

In recommending the breaking up of adhesions and searching for the appendix in cases of appendiceal abscess, I think Dr. Morris and Dr. Price have advocated a dangerous practice. They have recommended a line of procedure which, if carried into effect, will cause many deaths. While this practice may be followed with some success in careful and skilful hands, in the majority of cases it would be a dangerous procedure. I can conceive of nothing more dangerous than allowing the smallest quantity of this offensive septic pus to escape into the abdomen. In the last year, by gentle manipulation and treatment of these abscesses, I have had two secondary abscesses produced by the escape of pus into the abdomen, and the patients came very near dying. If you do not find the appendix by very gentle manipulation, you had better let it alone, and do simply a life-saving operation. When the abscess heals the intestine is largely freed from adhesions. There is no use in tying off the appendix in a large proportion of cases, as it is destroyed by the inflammatory process. An operation should be resorted to, if necessary, after recovery from the abscess. In cases of appendicitis on which we can operate early, before the formation of an abscess, we should do an ideal operation: remove the appendix, not tie off, and then bring up the bowel and sew the opening, as in a gunshot wound of the intestine.

Dr. Price has said that quite frequently the appendix is not found at the post-mortem examination. Of course, we cannot find it in some cases, for the reason that it has sloughed away. The inflammation is so destructive that it destroys everything in its reach, and it will not

do to allow such pus to escape into the general cavity. In these cases we can do a life-saving operation, and then, later on, if necessary, remove the appendix. I have had to do radical operations on two physicians in my city, some weeks after the evacuation of the abscesses, as the appendix still gave trouble. These cases are usually relieved by the opening in the appendix and the draining of the abscess. Some are cured by the abscess opening into the bowel, the appendix being drained or destroyed. In cases of appendicitis where the symptoms are severe, and last more than a week and then disappear, an abscess has opened through the intestine, but such cases should not be used as argument against operation. Some patients decline to subject themselves to the danger of a secondary operation for the removal of the appendix, but this should be insisted on if there be any evidence of recurrent inflammation, and the operation should be done within twelve hours of the attack.

Reference has been made to foreign bodies as being a more frequent cause of the disease at certain times of the year. I think this is due to a catarrhal condition brought about by eating too much fruit, and not to the seeds.

Dr. A. Vander Veer, of Albany.—I have been very much interested in the remarks that have been made with regard to appendicitis, and have done quite a number of operations for this disease. Dr. Peck has placed on record cases, if we study them carefully, that will be of value to us and to him. I have listened to the discussion with a great deal of interest, because I know it will be published in our medical journals, and it will be taken, either one way or the other, as a scientific discussion by men who understand what they are talking about, or else it will be looked upon as being extreme. We greatly respect the opinion of such men as Drs. Morris and Price—men who are not only scientific in their attainments, but whose results from operative work are above those which many of us can reach. Let me ask these gentlemen, candidly, if they have not been called to cases at a certain hour in the day or in the night that they could not reach? Some of the cases reported by Dr. Macdonald come under that head. If we could impress upon the physician at the time a little more as to what ought to be done, perhaps the results might be different. But to return to the position occupied by Drs. Price and Morris. Let us suppose that we receive a telegram at eleven o'clock at night from a physician who says he has a case of appendicitis. We talk it over through the long-distance telephone. He says the patient has been ill for six days; that he can make out a distinct phlegmon in the right iliac fossa. The

temperature has suddenly risen, the pulse has become accelerated, and if the patient keeps on until we can reach him tomorrow, about four o'clock, the probabilities are there will be a rupture into the peritoneal cavity, and septic peritonitis will take place. I do not believe it is possible to cure septic peritonitis in which we have the bacillus coli communis, and in which the abscess opened in that manner. This is what Dr. Davis referred to. By opening up an abscess that is walled off from the peritoneal cavity you are doing just what we carry out as a law of surgery. You tell the physician through the long-distance telephone to open up the abscess, put in a drainage-tube, wash out the cavity thoroughly, and, if you have pus, put in an iodoform gauze drain or glass drainage-tube, and then the chances are the pus will escape in such a way that Nature is relieved. The abscess does not break through the posterior wall. Later you do a secondary operation, and remove the appendix.

A word as to classification. Something like a year and a half ago I met two excellent practitioners, each living in towns of three or four thousand inhabitants. One had a case of perforative appendicitis, the patient being moribund, which died. He said he had had eleven cases of appendicitis, and ten had recovered. The other practitioner said he had had within the last three years eleven cases of appendicitis, and ten of them had died. They were both clear-headed practitioners and did their work well. They had given up the old classification of typhlitis, perityphlitis, etc. They were at sea as far as classification was concerned. It seems to me that we still have to adhere to some form of classification in order to guide the younger practitioners. We have the perforative and fulminative forms of appendicitis, and the latter form goes on and is precisely like a gunshot wound. If we can reach these cases early, we can do some good; but how many surgeons get there in time? These are the cases we ought to dwell upon, talk more about, instruct the general practitioner in, and thoroughly educate him as to what the symptoms mean.

I will speak of two cases that bear out what I believe to be corroborative of the remarks made by Dr. Davis,—that in these acute cases where suppuration takes place the appendix is destroyed. Last spring I was called to see a case which presented distinct symptoms of appendicitis. I watched the man carefully, and it was evident to me that he had the disease, Nature making an effort to wall off the appendix, and had succeeded. I saw him on the ninth day after the attack, at which time I could make out a distinct swelling in the right lumbar region. Tenderness had disappeared over the neighborhood of the appendix, and I had every reason to believe that the anatomical distribution of

that appendix was in the neighborhood of the posterior border of the cecum. I made a free incision through the lumbar region, and out came a portion of the appendix which had sloughed. The man recovered. We had evidences that the appendix was destroyed. This case illustrates the condition which takes place in the great majority of cases of suppurative appendicitis.

I saw another case, in January, 1893, in which I advised immediate operation, but the mother of the boy said she could not think of having an operation performed. The boy had another attack in May, 1893, and I saw the little fellow in December, and operated on him. In making my examination I found that the peritoneum was not tender and sensitive, but the rectum was full. As I put my finger into the rectum I came in contact with a mass that evidently indicated an abscess. I opened through the rectum—this is the second case of suppurative appendicitis which I have opened in that manner—and out came a portion of the appendix, a little longer than in the other case. We washed out the cavity, and the patient recovered. We must impress upon those practitioners who cannot do the operation that Dr. Price does, to open up some of these abscesses, and then a secondary operation can be done for the removal of the appendix later on. If a case of appendicitis occurs at a distance of one hundred miles, and you cannot reach the patient for some time, tell the practitioner in charge to open up the abscess at once. If this is not done, and the abscess discharges into the peritoneal cavity, the patient will have septic peritonitis, which will probably terminate fatally. Statistics are against recovery in such cases.

As to foreign bodies, I do not think this is a matter of so much importance, but fecal concretions were found in the majority of instances. I have a number of specimens that I have preserved, but I believe with Dr. Price, that at certain periods of the year, during the blackberry and grape season, more cases of the disease are liable to occur. The cecum is filled with seeds. It does not hold impacted feces particularly, but it holds foreign substances in such quantity as to produce irritation of the mucous surface of the appendix, and by extension of the irritative process we meet with a greater number of cases at the time of the year when fruit and certain forms of vegetables are eaten with greater freedom.

A word about the cases in which we do not find foreign substances —they are cases of the catarrhal form of appendicitis. In the repeated attacks that take place the patient is in great danger; you may have a simple catarrhal form of appendicitis, ending in perforative appendicitis.

As to the time of operating, I think, in the cases of relapsing appendicitis of the chronic form, that Dr. McDonald's statistics are too severe. I have operated in six cases of relapsing appendicitis, and all of the patients recovered. These cases are reported in the secular journals as cases that always recover. I must say that when you go to a family and tell the father and mother that their boy is dying, the hands and feet cold, they are very apt to tell you of cases they have read about in the papers as having recovered without operation. Now, for their benefit, it seems to me we should take time to explain to them the different forms of appendicitis,-impressing upon them that there is a decided difference in the varieties that we meet with.

DR. CHARLES A. L. REED, of Cincinnati.—I wish to emphasize one point which has been raised incidentally both in the papers and in the discussion. The point is illustrated by some recent cases. I will simply mention one. I was called to a town in Kentucky, a few miles below Cincinnati, by an intelligent physician, to examine a case that presented a classical history of appendicitis. The doctor had been hesitating about the necessity of an operation, although he recognized there was inflammation about the head of the colon. He concluded it was one of those cases the tendency of which was to recover, and the thing upon which he deferred operation was the fact that he was unable to discover McBurney's point. There are a great many members of the profession who believe in McBurney's point. They look for it, and they do not call a surgeon until they think they can find it. I wish to emphasize the fact that this point must not be looked for. There is no occasion to look for it, and the general practitioner who hesitates and searches for this somewhat mysterious and altogether variable symptom of disease is alluring himself and the patient along to a fatal result.

I recently operated on a stout, well-built man, who came to me with relapsing appendicitis. I operated upon him in the midst of the twenty-first attack. I could make out no physical symptoms whatever, but the history was classical. I found the head of the colon adherent to all proximal surfaces. Bringing it up, I found where there had been spontaneous amputation of appendix and closure of the orifice. I could find no pus about the head of the colon, yet the symptoms in the midst of which I was operating pointed unmistakably to pus. I enlarged the incision, liberated the adhesions, and three inches above the head of the colon I found a pocket of pus containing not more than an ounce that had already perforated the parietal peritoneum, and was burrowing into the abdominal wall; within two inches of this, and two inches farther remote, I found the appendix alive and well, being nour-

ished by its adhesion to the colon. These are the anomalous conditions which point to the fact that no man can tell, as Dr. Murphy has said, the pathological condition within the abdominal walls. When we wait for positive symptoms, when we wait for a positive diagnosis, we wait simply to welcome our patient into an untimely grave.

Dr. James F. W. Ross, of Toronto.—I take issue with Dr. Davis regarding large intra-peritoneal abscesses. I have opened the peritoneum of a little girl from which pus and gas spurted out like soda-water out of a soda-siphon, but after the operation the patient lived for two or three weeks and died from starvation. The original cause of the trouble was abscess in the mesenteric glands, which had perforated into the abdomen. I removed a pailful of pus from this child's abdomen. A post-mortem examination was made, and, to my amazement, the omentum and intestines were firmly glued together and the peritoneal cavity was obliterated. A sinus was formed between a hole in the intestine and the drainage-tube, so that milk taken into the child's stomach came out through the drainage-tube. Some of these cases of purulent peritonitis will have a tendency to cure themselves.

With reference to cases of fulminating gangrenous appendicitis, they all die. Dr. Bryant, in his remarks at Albany last February, distinctly stated that he had never yet seen a case of what he called fulminating gangrenous appendicitis that did not terminate fatally. My cases have all died, and for that reason when they come to me in what I call the second stage I do not operate on them. I do not think any of us can disagree with Dr. Carstens, that when a patient reaches the third stage, in which there is pus walled off, the right thing to do is to let the appendix alone. An operation done in the relapsing stage is not dangerous. I have never lost a case on which I have operated in this stage.

As to immediate operation, advocated by Dr. Murphy, I consider it to be sound doctrine; but here, in Toronto, we do not see these cases early enough. Dr. Murphy says when we see a man with the classical symptoms of appendicitis we should operate, but we do not see them in this region when these symptoms present themselves.

Dr. J. D. Griffith, of Kansas City.—I would ask the gentlemen who have spoken, particularly Drs. Morris, Price, and Murphy, who have had a large experience in this particular line of work, whether they have noticed that a catarrhal condition of the appendix produces a stricture. A year ago, in an article in the *Annals of Surgery*, Dr. Binnie wrote about the subject of appendicular colic as calling for operative interference, and Dr. Carstens, in an article published quite recently in the *New York Medical Journal*, speaks of the same thing.

I have operated within the last six months on three cases for appendicular colic, not for suppurative appendicitis, and I have been able to demonstrate satisfactorily that in at least two of the cases there was nothing but a stricture, except an enlargement of the canal. I could only pass a whalebone guide through the stricture. There was marked thickening of the circular and longitudinal fibers of the appendix at the point of stricture, showing that the circulation had been interfered with to such an extent that there was beginning in one of the cases an active ulcerative process. A collection of mucus beyond the stricture, and its escape back toward the colon, was the cause of the appendicular colic. It seems to me we have an easy way to account for some of these fulminating cases, as in the case cited by Dr. Reed, where there was no fecal matter, but the orifice of the appendix was closed. We speak of closure of a stricture in the urethral canal, and why cannot the same thing occur in the appendix vermiformis as in Fallopian tubes? I think appendicular colic may be regarded as a fixed entity.

Dr. Marcell Hartwig, of Buffalo (by invitation).—In regard to appendicitis in general, I am inclined to take the stand of the general practitioner. The conservative idea prevails with me. After all that has been said with reference to the great danger of appendicitis, if we take the average cases as they come to general practitioners we will find that the danger is not so very great. I have read German statistics of 90 per cent. of recoveries without operative interference. I will admit that we have cases of relapsing appendicitis. I have seen five or six myself. Dr. Macdonald has done good service in pointing out the different forms of appendicitis, those which require immediate operation and those which do not. The pulse of the patient ought to be some guide to us. If we have a case which progresses very slowly, we may reasonably conclude that the patient is not going to die. I believe in early operative interference in the fulminant cases of appendicitis. In chronic cases, when abscess has formed, incision with removal of the appendix is indicated and simple of execution; but even here I have several times seen that the vis medicatrix naturæ sufficed by spontaneously emptying the abscess into the bowel, probably the cecum. Where general collapse shows general peritonitis beginning, operation must be immediate.

Dr. Donald Maclean, of Detroit. — I belong to that race of people who very seldom hesitate or fail to respond when they are called upon, whether it is in peace or in war. But on the present occasion I do not feel very much like responding, for the reason that it is very late, and the subject has been so thoroughly and ably discussed that I

do not think there is much left for us to say, at any rate, not for myself, unless simply to express conclusions derived from my own experience.

First of all, I desire to indorse very heartily the doctrine that has been presented by my friend Dr. Carstens, viz., that when you have appendicitis with adhesions fencing off the abdominal cavity, and pus outside, you should open it as you would open an ordinary abscess and wash it out. But not even the eloquence of Dr. Murphy, the logic of Dr. Price, or the combined experience of the members of this Association, would induce me to break up such adhesions and enter the peritoneal cavity. I am firmly settled on that point in my own mind.

As to the question of early operation, if I had my patients entirely under my control in a hospital I certainly would favor and advocate early operative interference. Let us take, for example, a hundred cases in which an early operation is done for appendicitis, and I believe a great many of them would have recovered without an operation and permanently. I have had quite a number of cases under my observation, as well as the opportunity of watching them. One was a coachman who had a very acute attack of appendicitis; operation was postponed, and he got well without it. I have watched him ever since, and he is well today. I could cite many other cases along this line if necessary. In our practice we have to contend with the opposition of the relatives or friends of the patient regarding surgical interference, and this is a serious matter. It takes a man with a good deal of moral courage to go into a family and say to the mother or father, "Your lovely daughter of fourteen has got appendicitis, and must be operated on at once." It causes a shock to the family, and sometimes catastrophies of another kind result from that sort of thing. For instance, in Detroit, a young lady of a prominent family was taken with appendicitis, and the disease so diagnosticated by her physician. He called a surgeon, who advocated immediate operation, which had the effect of horrifying the family to such an extent that my surgical friend and the physician were both dismissed from the case. A so-called homœopath was called, and with the administration of his mystical little pills the case got well. Another case occurred not long after this one, and was in many respects even worse. The young lady was a member of an equally prominent family, and her case was a well-marked recurrent one of appendicitis. I operated on her, and congratulated myself at the time that the operation was over. The operation was done rapidly and gently, but still the patient woke up in pain, and continued in terrible agony. The temperature went up rapidly; in twenty-four

hours the patient died. These two cases occurring in one community within a short time of each other so affected the public mind that it was not favorable to rational surgical procedures. When we go into a family and advocate an operation for appendicitis at an early stage, it behooves us to be very sure of our diagnosis and to be very careful in the management of the operation. We must be prepared also for disappointment and disaster sometimes.

So far as the late operation is concerned, after the peritoneal cavity has become fenced off by adhesions, I have operated a great many times in these cases and have not lost one. The cases of appendicitis I have lost were of the perforative and fulminant varieties. The best chance for our patients to recover is when they are operated on in the early stage, before perforation or sepsis has occurred; but in following this rule we will, no doubt, often operate when that ordeal might have been avoided, and we will sometimes, no doubt, in spite of all our care and skill, meet with a kind of disaster which is peculiarly painful and disheartening.

Dr. L. S. McMurtry, of Louisville.—One cannot but recognize in the remarks of the several speakers the marked advances of knowledge in relation to appendicitis. Four or five years ago many eminent surgeons advocated expectant treatment in all cases until general peritonitis was established, and inveighed against operative interference until the last moment. Now early operation is generally conceded to be the only safe method of dealing with this disease.

Of the many important practical points discussed, I beg to direct attention to one in particular. It is to the importance of doing, in every case that will permit, a complete operation. We have learned the disastrous results of leaving behind diseased tissues and multiple pockets of pus in suppurative salpingitis, and the same principles should be applied in operating for appendicitis as in salpingitis. In some cases ideal surgery will be impracticable, and we must limit operation to opening, evacuating, and draining as an immediate life-saving procedure. But in all cases where the patient's strength will permit, a thorough operation should be done. Adhesions should be separated, multiple posterior pockets of pus should be emptied, and the appendix removed, with free flushing and drainage.

Dr. Willis G. Macdonald, of Albany (closing the discussion on his part).—Twenty-one of the cases reported in my paper were what I choose to call perforating, fulminating appendicitis, of which eight recovered, and in six of which I operated before perforation occurred. In one case I operated within three hours from the onset of the first

symptoms, at the Albany Hospital, and the patient recovered. The other thirteen deaths I do not hold myself responsible for. Out of the cases I recorded as suppurative appendicitis there were twenty-eight in all, twenty recoveries, and eight deaths. I think I know why four or five of the patients died. In four cases, in attempting to remove the appendix, I tore up the adhesions which communicated with the cavity where suppuration was going on, washed it out, using gallons of water, and inserted a glass drainage-tube, and they died. In the fifth case, in removing the appendix I found there was a local suppurative peritonitis, with adhesions.

From what I have seen, the operative treatment of appendicitis has been largely confined among a great many operators to two classifications—cases of localized abscess, of plastic peritonitis, and cases of relapsing appendicitis. Of all cases of relapsing appendicitis upon which I have operated, every one of them has gotten well, and of the other class of cases there is a mortality of 28 per cent. Five of these cases can be attributed to the breaking up of adhesions and the establishing of a communication between the general peritoneum and the area of the abdomen which has been suffering. I do not believe there is any system by means of which we can make it safe to turn this portion of infected peritoneum into the general peritoneum again, drainage or no drainage.

Dr. Joseph Hoffman, of Philadelphia (closing the discussion).—I have a few words to say in answer to some of the gentlemen who have preceded me. I am sorry the discussion has drifted into different kinds of cocci. Why gonorrheal pus is no less irritating than the pus from the bacillus which is supposed to inhabit the colon is beyond my understanding. It is only an effort to explain what we cannot understand. It is an explanation that does not go very far, for the reason that we constantly open up colonic abscesses opening into the peritoneum, and the patients get well. There is no earthly reason why, if the coccus of the colon is more poisonous than any other, one patient should get well and another die if there has been an abscess opening into the peritoneum. I have a case that verifies this opinion, in which the appendix was completely buried and had to be torn off piece by piece. The cecal portion of the bowel was almost gangrenous, had ulcerated through, and surrounding this was about two ounces of stinking pus. The cavity was carefully washed out and a drainage-tube introduced into the cul-de-sac. No antiseptics were used. The abscess was right at the head of the colon, and was washed out through the peritoneal cavity. The woman got well without a rise of temperature or bad symptom.

You may say that an isolated case proves nothing. Neither does it; but it does prove to my mind that there is nothing in the argument so far as the variety of the coccus is concerned.

Dr. Davis has said that cases of general peritonitis do not get well. He says, on the other hand, that they are similar to gunshot or stab wounds. If he treats a stab wound promptly within a few hours after its occurrence, he is sure the intestine is going to get well. A case was reported a while ago in which a fellow practitioner, in cleaning out a uterus which was full of retained placenta, punctured the uterus and carried the débris from the uterus into the peritoneal cavity, setting up general peritonitis. There was no pus there. We can have general peritonitis without the presence of pus, and a woman may die. To say that there is no peritonitis without pus is an error; yet there is poison or sepsis there. I opened up the abdomen in this case, and found the intestines generally injected and the abdomen full of fluid. The woman got well.

One word about breaking up adhesions. If I have a case of peritonitis in which there is an abscess, and that abscess is breaking down and the patient is in good condition, is it not better for me to open the abscess and break up the adhesions? Certainly it is.

EXHIBITION OF SPECIMENS, WITH BRIEF HISTORIES BY SEVERAL FELLOWS.

Dr. James F. W. Ross, of Toronto.—I have here an interesting specimen of a disease that is somewhat rare. The patient was sent to me suffering from hemorrhage from the uterus. The case was supposed to be one of fibroid. I dilated the cervix, made an exploration with my finger, and found a mass that I presumed to be cancerous tissue in the interior of the uterus. I removed a small portion of it for microscopic examination, and it turned out to be a malignant adenoma. Similar conditions have been reported, and I think it wise that we should show the specimens of such cases. I therefore decided to do a vaginal hysterectomy, and did the operation in the usual way, with the ligature. The patient made a good recovery. It is a little too early to report on the subsequent course of the case; but the specimen, as being one of malignant adenoma of the uterus, has considerable interest.

Dr. Reed.—How long is it since you operated?

Dr. Ross.—About five weeks.

Dr. John C. Sexton, of Rushville, Ind.—I would like to inquire whether microscopic examinations of bits of tumors removed are so reliable as to justify hysterectomy. I have submitted specimens to microscopists of varying degrees of skill and reputation, and have had divergent answers to the inquiries that I solicited. I did not gather exactly from Dr. Ross's remarks that he made this vaginal hysterectomy upon the microscpic examination alone, but possibly some of the members may have been under that impression. Personally I do not think we are justified in doing a vaginal hysterectomy upon a microscopic examination alone. If we have the presence of a tumor with constitutional symptoms, we might feel, *plus* the microscopic examination, that an operation was indicated; but we have so many contradictory reports from microscopists that they are not reliable in many cases. I was wondering, when Dr. Ross was speaking of his case, whether we had arrived at the stage of diagnostic acumen when, by submitting a specimen to a microscopist, we could make a positive

diagnosis, and were justified in operating on his report. I would like to hear that point further discussed.

DR. DONALD MACLEAN, of Detroit.—I would like to say on this subject that it would be very difficult for me to express my own honest conviction as the result of my own practical experience any better than my friend Dr. Sexton has just done. I have for a long time had the same difficulty. I have removed tumors, and have been very anxious indeed to estimate the future of my patient by submitting specimens to the best microscopists that I know of, and I must say the results have not been definite, satisfactory, or conclusive. I have removed tumors, and have had them reported upon by histological pathologists, and they have told me that the growths were malignant, and would surely return; that the patients would die in a short time, but the tumors have never returned. On the other hand, I have been told that tumors were perfectly benign, and there was no reasonable probability of their returning, and yet they have returned rapidly in a very malignant form. Therefore, I think it is a very dangerous and fallacious doctrine to lay down, a wrong principle to teach the doctor in the country or village, to scrape out a little bit of the tumor and subject it to microscopic examination, and then decide upon what the microscopist says in favor of or against an operation. It is not safe, so far as uterine growths are concerned, and it is not safe or even just, so far as tumors anywhere else in the body are concerned, in my opinion. Given a tumor of the neck, of the axilla, of the breast, of the uterus, or of any other part of the body, if the surgeon by careful observation and examination cannot determine by its general clinical characteristics, and say by its size, its feel, its history, its rapidity or slowness of growth (all of which we take into account), that the tumor is benign or malignant, the microscope will not help us in many cases. The microscopic examination should be taken in connection with other things. But I do not believe that the man is living today who can take a little piece of tumor, and by microscopic examination, provided you do not tell him where it came from, how it is attached, what its general clinical characteristics are, decide whether it is malignant or not, whether it will return or not, and whether it is safe to give a favorable or unfavorable prognosis. I do not believe the microscopist exists who can do that definitely. With all due deference to the microscopist, and all he has done for us, when it comes down to the delicate question of diagnosis between a malignant and innocent tumor—a tumor that will return and one that will not return; a tumor that ought to be removed and one that may safely be allowed to progress for a time—the microscope does not decide

it for us. A good many years ago a friend of mine said, with reference to these tumors: "You cut out a tumor, and if it does not return it is benign; if it does return and kills the patient, it is malignant." He was a very wise man who said that, and I think if he stood here tonight, in the presence of the members of this Association, he could reiterate that doctrine just as confidently now as he did then. That was my own preceptor, Prof. Syme. That was the doctrine laid down by him. I do not believe at that time the idea occurred to him that the microscope was going to show us everything clearly. We are advanced, and although he was a little conservative, was getting old, and a little "canny," yet forty years have elapsed, and I stand here tonight ready to indorse as a result of my own experience the doctrine laid down by him at that time.

Dr. Willis G. Macdonald, of Albany.—I desire to say a few words about the specimen of Dr. Ross. I have had some experience with pathological work, and when it comes down to the condition of adeno-sarcoma I have every confidence that in a given case, or such a case the specimen of which Dr. Ross has shown here, the pathologist is competent to say that it is or it is not adeno-sarcoma. I speak a word or two in defence of pathology. Surgeons require too much of pathologists. They want us to do too much. They do not want to tell us about the clinical history of the case, or the course which the disease pursues, but they bring to us a small piece of a tumor, and say: "I want you to diagnosticate that." They do not tell us whether it was removed from the base of the tongue or from the cervix. The pathologist is entitled to the clinical history of the case, and he is entitled to know the gross appearances of the tumor. It takes all these things in order to determine the precise character of the growth.

Dr. Joseph Price, of Philadelphia.—We have a right to ask of pathologists, in justice to our patients, for at least more care on their part, and the correction of looseness and carelessness heretofore observed. I agree with Dr. Maclean, that the clinical experience and knowledge of the surgeon are really of more value to the clinician than the assistance he receives from the histologists or pathologists. A few years ago the mother of eight or ten children walked into the University of Pennsylvania with a huge tumor, and the surgeon removed a piece of it and placed it under the microscope. All hands looked wise, and said it was sarcoma, and this poor woman was placed on the table and amputation at the hip-joint followed. The tumor proved to be a large lipoma, simply a big piece of fat which, by a little incision, could be rolled out like an orange out of its peel.

In regard to the tumor presented, the clinical history of malignancy is sufficiently prominent in most cases to guide the clinician. The free watery discharges, for all the world, are like washings of meat. These offensive discharges are never absent, and I have never known an experienced surgeon to make a mistake in extirpating the organ after the use of the curette in cases of this kind. We should study their natural history.

Dr. Frank A. Glasgow, of St. Louis.—I should be very sorry to go on record as belittling pathological histology in medicine and surgery. Dr. Price instances cases of mistakes of pathologists. I am prompted to ask him if he has never made a mistake. If the surgeon is confined simply to the sense of sight or touch alone in these cases, he will make mistakes. I admit that we can tell a good deal about these intra-uterine growths by careful investigation without the microscope. I have done it myself, and have avoided several hysterectomies by this means. I have a case at present that came to me for hysterectomy. The symptoms were those of malignancy. The woman was in a terrible condition. I curetted a little, examined fragments of the tissue removed, but could find nothing but an inflammatory, chronic infiltration. This does not prove anything, but if you happened to get hold of pathological tissue itself, if it is epitheliomatous, you have something certain. You may say positively it is a malignant growth. I know of nothing in the histological line to decide positively between inflammatory growths of the uterus and a sarcomatous one. This is a very difficult thing to do. If the growth is epitheliomatous, you can positively state that it will return. The same holds true with adenoma. I had a case of adenoma of the uterus in which I made the diagnosis myself. I curetted a little, and sent a specimen to Dr. L. Bremer, of St. Louis, without any remarks except that I removed it from the uterus. He reported that it was a malignant adenoma, and recommended removal of the uterus, which I did, and there has been no return yet, and the uterus was removed two years ago. If you send one single fragment out of a hundred to a pathologist and expect him to make a diagnosis, you are asking too much. Send him all you remove. Let him pick out what is pathological. We ought not to go on record as belittling the value of histological pathology, because it is very valuable. It is at least one method of making a diagnosis, like the sense of touch or sight. The histological pathologist should have every aid you can give him.

Dr. James F. W. Ross, of Toronto.—I must differ from some of the gentlemen regarding the clinical history of these cases, because myoma in the uterus, if either gangrenous or inflamed, will simulate exactly

malignant adenoma of the uterus. In each we have a watery, offensive discharge and hemorrhage, and it is only by means of the finger that the diagnosis can be made, and then the microscope in the one case will positively prove adeno-sarcoma, because there is no growth that can be more readily made out than it. It is positive in its characteristics. In the other case it is impossible to differentiate between sarcoma and inflamed myoma. A leading pathologist has told me that. I gave him a specimen of an inflamed myoma that I removed from the cervix, and it was impossible for him to say where it came from. The microscope does not do all in a great many cases, and we know that pathologists make mistakes; but in connection with epithelioma of the cervix, and simple adenoid degeneration of the cervix, the microscope will materially help us. I have more than once stitched a cervix sent to me for removal for malignant disease, in which I was able to satisfy myself, by means of the microscope, that the inflamed and mossy condition of the mucous membrane was not due to any malignant disease, but due to irritation of the mucous membranes allowed to protrude as a consequence of an old laceration. Then, again, in other cases I have removed the disease because the microscopist has stated positively that the disease was epithelioma.

Dr. A. H. Cordier, of Kansas City.—The first specimen I present to you is a large nephritic calculus, in which case there was an entire absence of symptoms pointing to the presence of stone in the kidney. It is of interest, from the fact that I think it is the largest stone that has been removed from the human subject, and also from the fact that the kidney is still performing its function, the patient having recovered entirely from the operation. The stone weighs three ounces. A lumbar incision was made as for nephrotomy, and the bladder washed out with boric acid. After catheterizing the ureters, pus was found to come from one kidney, and I decided to cut down upon the organ, and this is what I found in the pelvis of the kidney. (Exhibited stone.)

The lumbar incision was left open; the kidney secreted a pint and a half of urine for a few weeks; finally the incision ultimately closed, and the patient is now perfectly well.

The other specimen I present is one of extra-uterine pregnancy. Rupture took place between the sixth and eighth week at the placental site in the tube, the fetus escaping through the pavilion extremity of the tube. At the time of the operation the cord was passing up through the distal opening of the tube. The operation was performed three weeks ago. I cut the tube on the under side in order to show the placental structure still in the tube. Following the rupture the abdomen

was full of blood. I present the specimen because I think it is a rare one.

Dr. Joseph Price, of Philadelphia.—It is an error to record cases of this character. Rupture of the uterus is not classed as abortion. If you have a rupture of the tube, with the side knocked out, and hemorrhage, it is a clear case of extra-uterine or ruptured tubal pregnancy. This is not tubal abortion. There is nothing in the natural history to justify such a classification, and the case reported is typical of the class of ruptures taking place at the third month. They rarely go beyond it. It demonstrates beautifully what sometimes becomes of the fetus. Dr. Cordier did not find the fetus. The cord was found. The child did not escape from the side of the rupture. Perhaps adhesions existed at that point. Escape of the contents of the tube from the pavilion extremity is fortunate for the patient. All ruptures take place toward the uterus, and the nearer the uterus the rupture the more fatal the case. In the thirty-five post-mortems made by Formad, thirty of them died within four hours, and four died within twenty-four hours. As the rupture approaches the cornu or uterine extremity of the tube, the shorter the life of the patient, the greater the hemorrhage. You will find protruding from the pavilion extremity a clot occasionally. I allude to another point that is commonly criticised, and that is, some gynecologists with kindergarten experience have gone so far as to say that unless you find a fetus it is not extra-uterine pregnancy. I presume that these embryos in gynecology would question the diagnosis in these cases, even if they found the cord protruding through the tube. These little babies are often digested, but sometimes found. Formad in one of his cases said that he found a little Irishman sitting on the pancreas. This subject is an interesting and fruitful one for discussion.

Dr. Willis G. Macdonald, of Albany.—I have here a specimen in the form of an ink bottle which was removed through the rectum after an abdominal section. The history of the case was something like this: The man had been suffering from hemorrhoids, and was in the habit of relieving himself by using this bottle. In attempting to do so, one day, the bottle slipped from his fingers and went into the rectum. His physician tried to extract it with a variety of forceps, but could not do so. One doctor recommended that I should try a vacuum tractor. I did so, but could not draw it out. I put the man in the hospital. My hand was rather too large to introduce to draw the ink bottle out, and after several unsuccessful attempts I made an abdominal section, pushed the bottle low down in the rectum, and Dr. Hailes, who assisted me at the time, applied a small obstetric forceps and delivered it.

Dr. William Warren Potter, of Buffalo.—By a reversal of peristalsis a foreign body in the rectum will pass upward in a short time. This has been demonstrated over and over again. The same is true with fecal matter; if it is not dejected, it will pass upward into the colon. It is well established that nutritive material when thrown into the rectum is capable of carrying on nutrition for a considerable period, not because the rectum is capable of digesting it, but because of the retrostaltic action of the intestinal tube, which carries the food upward until it mingles with the chyle, and is finally taken up by the absorbents. This foreign body, taken from the rectum by Dr. Macdonald, illustrates very well the reversal of peristaltic action to which I have referred.

Dr. Macdonald.—I may add that this man did not have any incontinence.

Dr. A. Vander Veer, of Albany.—When I returned from my vacation, and Dr. Maedonald came into my office and showed me this ink bottle, it reminded me of a case that came under my observation a few years ago. A man was in the habit of using a sperm candle for the same purpose, and one day the candle disappeared. We had a delightful time in getting it, but finally succeeded in withdrawing it with a pair of placental forceps.

Dr. J. Henry Carstens, of Detroit.—The case reported by Dr. Ross emphasizes the necessity in all doubtful cases of making an exploration, removing a piece of tissue for microscopic examination in order to know how to treat them properly. This point should be impressed upon the minds of country practitioners in order that cases may not become too far advanced when they reach the surgeon.

Dr M. Hartwig showed a clinical thermometer that a patient had (while the temperature was being taken by the vagina) pushed into the bladder. By dilating the urethra he removed it.

A QUESTION OF PRIORITY.

The Ligation of the Uterine Arteries for the Cure of Fibroid Tumors and Checking Hemorrhage.

By WALTER B. DORSETT, M.D.,
ST. LOUIS.

Some attention has lately been given to the subject of the ligation of the uterine arteries for the cure of fibromatous growths of that organ, as well as for the checking of hemorrhages from other causes. And it seems as each new case is reported interest is again awakened as to the future value of the operation. It is for the purpose of establishing one's right to the priority, as well as originality, that I beg the Association's valuable time.

On February 15, 1889, and during the time I was superintendent and surgeon in charge of the St. Louis Female Hospital, there was admitted for treatment a patient, aged twenty-eight years, who presented on examination the most peculiar atrophic condition of the internal and external organs of generation. So unique was this case, that I made careful inquiry as to its origin, in order to arrive at its etiology.

From a letter from a physician in Terre Haute, Ind., I learned that eight years previously to her coming under my observation she had suffered from an inversion of the uterus immediately following hard labor. This, to my mind, was the only assignable cause for this condition of atrophy, and on this I reasoned: How and by what means was this atrophy brought about? For, in order to treat the case, this question should be uppermost in our minds. Let us consider for a moment the arterial supply to the uterus and its appendages.

The arteries of the uterus are the uterine from the internal iliac, and the ovarian from the abdominal aorta. They are remarkable

for tortuous course in the substance of the organ and for their frequent anastomosis. The veins are of large size, and correspond with their arteries. The uterine artery passes downward in its course from the internal iliac to the neck of the uterus, then upward alongside of the body in a tortuous manner between the two layers of the broad ligament.

Now what became of these arteries during the inversion of the uterus? Is it not reasonable to suppose that they were so twisted and turned upon themselves in such a manner as to occlude their caliber, and that in the process of descent and restitution of the organ that their functions were so impaired as to unfit them longer for blood-carriers? and, as the organ was deprived of nourishment, it very naturally atrophied. The same condition followed in the vagina, and from the same cause: an obstruction to the arterial supply. This explanation seems to my mind the only one in this case.

In studying uterine therapeutics, we find that leading men now treat inflammations of the uterus and periuterine inflammation by tamponading the vagina, believing that, aside from the medicinal agents with which they may be saturated, much benefit is derived by the mechanical pressure brought about. The rationale of the treatment of fibroids by the use of ergot is to decrease the blood-supply to the organ, and on the supposition that ergot contracts the arterioles.

The ligation of the vertebral artery for the cure of epilepsy is on the supposition that the blood-supply may be decreased. So also the electro-therapeutist uses his positive or negative electrode to dilate and contract, to congest and to empty. Admitting for a moment that I may be right in the supposition that this atrophy was due to an artificial ligation of the nutrient arteries, I am emboldened to make this statement:

Namely, I believe that in the treatment of uterine fibroids, whether submucous, intramural, or subperitoneal, as well as for chronic inflammations of the organ, to ligate the uterine artery would not be an unscientific procedure. On the contrary, the more I have thought of it the more I am inclined to believe that it would be the most rational and at the same time most certain mode of treatment. To do this it would not be necessary to open the peritoneum.

Place your patient in the lithotomy position, as if to perform a

vaginal hysterectomy, and, if for a fibroid tumor, make your incision alongside of the neck, right or left, as the case may be, according as the tumor may be to one side or the other; dissect up the tissues until you feel the pulsation of the artery; throw around it your catgut ligature, tie it, and the operation is finished.

The collateral circulation is so perfect and extensive, the artery is so easily reached, the after-treatment so simple, I do not see why it may not be done.

I made these observations during December, 1889, and January and February, 1890, and reported the case of atrophy of the genitalia. I described the technique of the operation of ligation of the uterine arteries for the cure of fibromatous growths in a paper I read before the St. Louis Medical Society, May 17, 1890, and it appeared in the August number, 1890, of the St. Louis *Courier of Medicine*, this journal being the official organ of the St. Louis Medical Society at that time, and by contract had the exclusive right of the publication of the proceedings of that body.[1]

During the month of March, 1893, my attention was called by a medical friend to an article by Prof. Sigmund Gottschalk, of Berlin, in *Archiv f. Gynäkologie*, Bd. xliii. Heft 3, in which he reported two cases upon which he had performed a bilateral ligation of the uterine artery for the cure of uterine myoma. Both cases were materially benefited. I immediately wrote Prof. Sigmund Gottschalk a kind and friendly letter, calling his attention to my suggestions embodied in the report of the case of uterine atrophy, and sent him by the same mail two reprints from the *Courier of Medicine*.

After waiting a month, I wrote him again, and again sent him reprints. I have not up to the present time had one line from him in return, not even an acknowledgment of the receipt of my letter and reprints.

When I received the April, 1893, number of the *American Journal of Obstetrics and Diseases of Women and Children* I was naturally surprised to see on the first page an article by Dr. Franklin H. Martin, of Chicago, entitled "Vaginal Ligation of a Portion of the Broad Ligament for the Treatment of Uterine Tumors and Hemorrhage." Upon careful study, I soon found that the opera-

[1] Aside from a few introductory remarks, the foregoing is a quotation from my first paper on the subject, read May 17, 1890.

tion delineated in this clearly written article was practically the same operation I had advocated in my paper, May 17, 1890, or two years and eleven months before. The technique of the operation so described was precisely the same, the position the patient was to occupy during the operation was the same; in fact, it only differed from mine in that a portion of the broad ligament, and in some cases the ovarian artery, was included in the ligature; this last, the ligation of the broad ligament, which, of course, includes the nerves and lymphatics—in short, everything contained between the anterior and posterior layers of the peritoneal roof—I take it, is a totally useless and dangerous addition to the simple ligation of the artery, and to my mind could not affect the growth of a myomatous tumor beyond the simple strangulation of the artery as is accomplished in including the artery alone in the ligature.

Upon seeing this article and reading the technique I immediately wrote the editor of the *Journal*, and called attention to my work in this direction. In the following number appeared my letter, together with a communication from Dr. Martin (I having previously written him a private letter, enclosing a reprint of my original paper). In this letter he acknowledges the receipt of my letter, and claims that his operation differs from mine in this (quoting a portion of the letter)—he says to the editor: "Will you kindly call attention to the fact that the idea of his (Dr. Dorsett's) operation is limited compared to mine, inasmuch as he advises simply the ligation of the uterine artery, while I advise ligating as much of the broad ligament as possible, without usually including the ovarian artery, but under desperate circumstances also including the latter blood channel in suitable cases, my idea being to cut off the nerve supply, with the object in view of producing profound shock and considerable change of nutrition."

Further on he says, "My operation is distinct from his in idea and in execution, being ligation of the broad ligament from the *vagina* (italics mine), while his as published was simply a suggestion that the uterine arteries be ligated for uterine fibroids."

The above declaration was met by me in my letter to the editor in the following language: "When we talk of ligation for checking hemorrhage, or for the diminution of growth of tissues, be it physiological or pathological, we naturally presuppose that we are to

ligate a feeding vessel alone, and not nerves, lymphatics, connective tissue, etc."

And further on I say: "In the discussion of the subject he (Martin) draws attention especially to the ligation of the uterine artery, and directs the operator as to the importance of feeling for the pulsation of the vessel." Why, may I ask, should he advise feeling for the artery when all the structures are to be included in the ligature?

Again, he hardly does me justice when he says: "My operation is distinct from his in idea and execution, being ligation of the broad ligament from the vagina." Did I not, allow me to ask, lay some considerable stress upon the position the patient was to be placed in when I said to do this it would not be necessary to open the peritoneum? "Place your patient in the lithotomy position, as if to perform a vaginal hysterectomy, and if for a fibroid tumor make your incision along the side of the neck, right or left, as the case may be, according as the tumor may be on one side or the other. Dissect up the tissues until you feel the pulsation of the artery, throw around it your catgut ligature, tie it, and the operation is finished."

This certainly implies that the artery is to be reached through the vagina. Now I claim that the ligation of the artery alone is the rational treatment, and is all that is necessary, under ordinary circumstances, and to add to it the ligation of the broad ligament, or a part thereof, does not materially effect a change in so far as the ultimate result to be sought in such cases, viz, a starvation and a consequent atrophy of the fibrous growths. And if for chronic inflammations or hemorrhage, to ligate the artery alone is all that is necessary.

In the *American Journal of Obstetrics*, vol. xxix. No. 6, June, 1894, appears a letter to the Secretary of the Chicago Gynecological Society, from Prof. Gottschalk, claiming priority as to the operation and technique of ligation of the uterine arteries.

He, having seen the reports of Martin's cases in so prominent a journal as the *American Journal of Obstetrics*, thinks that he has been robbed as it were of his laurels, and claims that the ligation of the uterine arteries was first suggested by him in his article at the International Congress held at Brussels, September 16, 1892, while I read my suggestions and technique May 17, 1890, or two

years and four months previously, and two years and nine months before Martin's name became associated with the procedure.

Dr. Martin does me the honor of acknowledging my priority as to the suggestion, but because he first published the execution as an operation *per se* (notwithstanding the fact that he calls it the ligation of the broad ligaments) claims that the operation should be called Martin's operation. I submit that to this he is not entitled.

My own experience, while not extensive, has demonstrated just what I predicted in my original and first paper, in May, 1890, now more than four years ago. I have performed this operation four times: once for hemorrhage, consequent upon an obstetrical laceration of the cervix; once for persistent and uncontrollable hemorrhage due to carcinoma of cervix and body of uterus; and twice for uterine fibroids. As to the two last-mentioned cases, the length of time has not been great enough to cause an entire obliteration of the neoplasms, and hence I have not as yet reported them as cures. I will say, however, that the first operation on a fibroid case was made three years and nine months ago upon a negress aged thirty-two years, the tumor being a partially subperitoneal and intramural fibroid situated on the anterior and middle segment of the organ, and by its pressure seriously interfering with the functions of the bladder. As near as I could tell by the bimanual touch, it was at least four and a half inches in diameter, and was of an oval shape. This patient, three months after the operation, experienced entire relief from the bladder symptoms, and an entire cessation from other pain in the uterus itself, and upon examination recently made the tumor does not measure more than one and a half inches in diameter.

The second case of fibroid was a submucous tumor, one in which persistent and uncontrollable hemorrhage was the annoying feature. She was a washerwoman, aged thirty-eight or forty years, who was compelled to earn her own living by hard work. I cannot give the history of this case to date, as she has removed from St. Louis, and I could not trace her. Suffice it to say, however, the hemorrhage ceased in frequency, and was materially diminished in quantity.

DISCUSSION.

DR. E. W. CUSHING, of Boston.—MR. PRESIDENT: As far as the ligation of the uterine arteries is concerned, I was taught long ago in Martin's clinic, in Berlin, that this was the proper thing to do in cases of serious hemorrhage. In operations for laceration, carcinoma, etc., and in cases of flooding from abortion, where it is necessary to control hemorrhage easily and rapidly, it can be done by ligating the uterine arteries. As far as the treatment of myoma is concerned, not for hemorrhage, but for causing involution of the tumor, I do not think Martin, of Berlin, would have recommended that, or would do so now. It appears to me that there exists the objection that if the ligation of the arteries was sufficient seriously to impair the nutrition of the tumor, there would be danger of causing sloughing or rapid degeneration of the tumor, which is large.

With regard to reducing a large fibroid tumor by stopping its nutrition, it seems to me, if the thing is effectual, we are liable to cause sloughing; if it is not effectual, the uterine circulation will soon be restored by the growth of the ovarian artery.

It seems to me, even in the light of this paper, the first case of ligation of the uterine arteries was actually reported by Dr. Franklin Martin, of Chicago, if I correctly understand the essayist.

DR. DORSETT.—Yes. Dr. Martin published his case before I published the suggestion.

DR. CUSHING.—Then Dr. Franklin Martin has been the first actually to perform the operation and report the cases deliberately undertaken for the cure of large myomata by involution.

DR. J. HENRY CARSTENS, of Detroit.—It seems to me we cannot go into this question of priority unless we carefully study the literature of the subject. If Dr. Dorsett is the originator of the method, he is certainly entitled to the credit. That, however, is for Drs. Martin and Dorsett to decide between themselves, and it is not for this Association to do so.

REMARKS BEARING ON THE SURGICAL TREATMENT OF INTUSSUSCEPTION IN THE INFANT; TWO SUCCESSFUL CASES.

By HENRY HOWITT, M.D.,
GUELPH.

The term infant, as used in this paper, is employed in a modified sense, being restricted to the nursing epoch of life, or, more definitely, to the child under one year of age.

Intussusception plays an important rôle at all periods of life in the causation of intestinal obstruction. According to Treves and Leichtenstern, when we class all varieties of bowel obstruction together, it forms more than one-third the whole number. The same, and other excellent authorities, aver that no less than one-fourth of all cases of intussusception occur during the first year of life.

Although, as a rule, the diagnostication of it in the infant is not by any means difficult, few who have given the matter attention will differ from me when I state that more instances of the malady are overlooked in early infancy than at any other age; and a review of the literature pertaining to it compels one to believe that when the subject is better understood, especially by the general practitioner, the above estimate of its frequency will be found to be below the mark. At this age the flaccid condition and the loose attachment of the mesentery, the proneness on slight irritation to irregular intestinal muscular action, and the common occurrence of catarrhal affections in the alimentary tract, probably account for its greater frequency than at other periods of life.

Taking all forms of intussusception together, the general mortality is 70 per cent.; but, if we confine our observations in this line to the infant at the breast, and exclude professional assistance, the

mortality percentage leaps with a bound to almost, if not to, 100 per cent. Ordinary treatment, including mechanical distention of lower bowel with gas, air, or liquids, does not materially affect the death-rate.

This calamitous outlook is ascribable to the fact that in infants, as a rule, to which there are few exceptions, the invagination is so acute that the efforts of nature are powerless, and after the lapse of a few hours ordinary measures of treatment cannot succeed, on account of the edematous and other changes in the intussusceptum. At other ages, spontaneous reduction of the displaced bowel, and spontaneous elimination of the portion causing the obstruction, are factors to ward off a fatal termination; but here, in at least the recognizable cases, spontaneous reduction never takes place, and elimination only in 2 per cent.; even then it does not by any means indicate recovery.

If we exclude the extremely uncommon varieties, and the pseudo ones, which happen immediately before death, in brain and other diseases, the invagination found is either ileo-cecal or ileo-colic; the former is generally, and the latter, in my opinion always, beyond the reach of any treatment short of celiotomy.

It is impossible to differentiate during life between the two varieties, nor will even inspection on exposure of the involved portion of the bowel before reduction reveal which of the two varieties we have; for the reason that in the ileo-colic variety, shortly after the lower few inches of the ileum become prolapsed into the cecum, the tenesmic efforts induced force the cecum into the colon, and its after-course exactly resembles that of the ileo-cecal.

Now, it is not difficult to understand that by trusting to distention of the colon by gas or liquids a serious mistake may be made. For example, in a given case the distention may reduce the cecum and portion of colon involved, while the most important and acute part of the invagination, the prolapsed end of the ileum, remains, and on account of its small size is apt to escape detection, and thus lead to false security, which is very sure to be disastrous. Reduction by distention of the colon, if admissible at all, should only be attempted in the early hours of the attack and in the absence of marked tympanites. If used early, it does not exclude, in event of its failing, an operation afterward; but if employed later, or when the abdomen is distended with flatus, it is liable either to rupture the

intestine or lead to arrest of respiration from pressure on the diaphragm; the latter alarming accident, as will be seen below, happened twice in one of my cases.

I am fully aware that leading authorities on the subject more or less strongly advise repeated and prolonged trials at disinvagination by distention and taxis; at the same time it is my firm belief that just so long as this advice is followed by the profession the mortality will remain, as in the past, appalling.

To my mind, in the whole line of modern surgery with its vast strides on the road to light there are few human ailments which demand more prompt surgical aid than do the majority of these cases; and, under favorable circumstances, there is little valid reason why, in competent hands, the mortality should be greater than in the average major operation. Moreover, the operation is an ideal one, being restorative and free from mutilation, and its successful accomplishment fulfils two of the noblest aims of our profession—the alleviation of pain and the prolongation of the sum of human life.

At the annual meeting of the Ontario Medical Association in June, 1889, I read a paper on "Miscellaneous Laparatomies," which was shortly afterward published in the *Canadian Practitioner*. The article contained a brief and hurriedly written report of my first operation for intussusception in the infant. In part from it, but chiefly from my notes taken at the time, allow me to state the following facts in regard to the case—namely:

The exact age of the patient, a male child, was at the time of operation two months and twenty-eight days. He had had, though fairly well nourished, almost constantly from birth, considerable catarrhal irritation of the bowel, manifested by frequent loose stools, often containing mucus tinged with blood.

The onset of intussusception in this case was sudden, being announced by an unnatural, piercing cry, which was soon afterward followed by paroxysmal attacks of colic, accompanied with vomiting and tenesmus. Blood and mucus were passed, but no fecal matter nor gas. A dose of castor oil, administered by the mother, aggravated the symptoms, especially the vomiting, which now (a very unusual occurrence in infants) became stercoraceous. After this he refused the breast—in fact, to swallow anything. The paroxysms of pain continued to grow more frequent and prolonged, and the intervals of freedom less. No medical man saw the case until the

afternoon of the second day, when he was carried to my office. The child was then in a very critical state, temperature 102°, pulse 135, and abdomen greatly distended. During the paroxysms he now, owing to weakness, merely moaned in a piteous manner.

An oval lump was detected in the right side, a little above line of umbilicus, which was extremely *tender to touch.*

Under complete chloroform narcosis, with pelvis elevated, the distention method, aided by taxis, was tried; but when a pint or more of liquid had been forced slowly into the bowel the child suddenly ceased to breathe. Escape of the fluid and artificial respiration accomplished our aim—resuscitation. Believing at the time that this untoward event was due to careless administration of the anesthetic, another attempt at disinvagination by the method was made, but the result, except more alarming, was the same. On examination, after second resuscitation, the lump was so much smaller in size that its detection by the hand externally was very difficult; and it occupied a lower position in the side.

With as little delay as possible an abdominal section was made. The incision extended in the median line from half an inch above the umbilicus downward as far as the bladder would permit. No attempt was made to prevent escape of the distended coils of intestines, nor could this have been successfully accomplished. On the contrary, eventration was hastened by hand until the invaginated portion came into view. It was easily brought out through the incision. The exposed intestines were protected by suitable cloths wrung out of hot water, applied in layers, the outer of which were changed frequently. The intussusception proved to be the lower three or four inches of the ileum prolapsed through the ileo-cecal valve. The cecum and colon were collapsed, and the former, and the greater part of the ascending portion of the latter, presented unequivocal evidence of having recently been involved in the invagination. No doubt the reduction of them had been brought about by the previous efforts in the way of distention.

The prolapsed part of the ileum proved by far to be the most difficult step in the operation, and it refused to yield until a plan similar to that commonly advised for paraphimosis was adopted. Immediately after relieving it, some gas and liquid contents of the upper bowel entered the colon, and in a few minutes flatus was expelled from the rectum. The passage of the contents of the small

intestines into the large was helped by gently grasping the former between two fingers and running them along it toward the colon, in such a manner that they were forced through the ileo-cecal valve.

The bowel that had been involved in the intussusception was dark in color, edematous, and in places furrowed. On the ileum, close to the cecum, and again four inches from it, there were clear indications of ruptured adhesions and several small abrasions of the peritoneal coat.

When the intestines were replaced the wound was quickly closed with silkworm-gut sutures, which included all layers, and a continuous superficial one of silk.

My notes do not tell how long it took me to complete the operation, but they do show that within two and a half hours from the time the child entered my office I was sitting by his cot at the Guelph Hospital and hearing explosions of flatus. In a less interval of time after the operation his bowels moved freely. He had no more paroxysms of pain, nor did he even vomit. Took the breast several times before morning. On the second day his temperature was normal. Recovery was rapid, and his mother took him home before the end of the second week. Date of operation, July 4, 1888.

After the operation he was entirely free from his old complaint, dysenteric diarrhea. I am sorry to relate that, in the early months of his fifth year, he contracted diphtheria and died.

My second operation for intussusception in an infant took place last spring.

Frank L., born October 25, 1893. The child, from birth until he entered his fourth month, had been fat and rugged; after this, up to time of operation, was troubled with frequent passages of loose stools, and also inclined to vomit what he had nursed more than he formerly did. The motions were in other respects natural, and the act of defecation free from pain and tenesmus. Although his weight fell off a little, he was still a fairly well-nourished child, and was neither ill-tempered nor restless.

On the morning of the 20th of April his mother carried him out for an airing; on her return she nursed him, and he slept quietly for two hours. When he awoke, his sister rocked his cradle and otherwise amused him. Suddenly he gave an agonizing scream and apparently fainted. When the mother, who ran immediately to his

cradle, picked him up he was pale and limp. The surface of the body became cold and covered with a clammy sweat. A hot bath, mustard plaster, and friction were resorted to; then after considerable time the child vomited, when reaction slowly commenced, and, as it became established, paroxysms of pain came on, accompanied with further vomiting and tenesmus. During these attacks, which were becoming more frequent and severe, the child writhed and screamed.

About two hours after the commencement a medical man from a distance, who happened to be in the village where the parents resided, was requested to see the infant. The doctor, after an examination, remarked that the temperature was normal; still he feared the patient had a "touch of inflammation of bowels." He gave an anodyne mixture, ordered a dose of oil, and hot applications to abdomen; the oil to be repeated in five hours if necessary. An hour after the doctor left the mother gave an enema, and dark blood, slime, and a little fecal matter came away. The oil was repeated in five hours, but it only increased the straining efforts, and the amount of blood and mucus, but except these no bowel movement occurred. The anodyne mixture, which was frequently repeated, by evening relieved the pain and quieted very much the tenesmic efforts. The child slept occasionally during the first part of the night, but after midnight the medicine seemed to lose its effect, and in consequence the intermissions between paroxysms became shorter as time advanced. He nursed frequently, but always vomited it, and occasionally a yellowish-colored material.

On the following day the parents became alarmed, and called in their family physician, Dr. Robinson, of Guelph, who arived at noon, about twenty-four hours after the commencement of the attack. The doctor at once correctly diagnosticated the true condition of affairs, and, besides the symptoms given above, made a note of the following, namely: temperature 104°, pulse 140, face pinched with anxious expression; except a little fulness in lower abdomen, no tympanites; the presence of a lump in right side, deeply seated, and only reached by firm pressure, which caused much pain.

When the doctor returned to town he related the history of his case to me, and I concurred with the diagnosis. The result was that the child arrived at the hospital at 5 P.M. that day. He was now so extremely low that I became chicken-hearted, and refused

to attempt any active measure of treatment until urged by the parents, who said that no matter what the result might be, no blame would be attached to us. They also added that on the way from home they hardly expected him to reach the hospital alive.

Meanwhile preparations had been completed to carry out Senn's plan of disinvagination by rectal insufflation of hydrogen gas, and in event of its failure to perform abdominal section. Palpation of abdomen under chloroform, on the operating-table, revealed the lump by this time to be high in the right side; in fact, partly under the ribs.

Although we had Senn's apparatus, as supplied by Shores & Co., of Milwaukee, the gas failed to have any effect whatever. I admit it is possible our manner of using it may have been defective.

A three-inch incision was now made in the median line, through which a large portion of the small intestine was drawn out and protected, as in my first case. The evisceration allowed me in less than a minute to reach the seat of invagination and to bring it into view.

To the eye the ileum appeared to enter the right extremity of the transverse colon, with an enlargement of the latter commencing at the junction of the two, and extending along the large bowel for three or four inches. Consequently the lower portion of the ileum, cecum, and ascending colon were invaginated.

Now came the difficult step in the operation, and which, excluding that spent in the attempt to relieve by insufflation, occupied more time than all the others. After failure by repeated trials of different methods, I was seriously considering whether to resect the part or to exclude it from the fecal circulation, by making an anastomosis with a Murphy button between the ileum above the obstruction and the transverse colon below, when, pressure being made on the apex of the intussusceptum, while the intussuscipiens near the neck was pulled in the opposite direction, it yielded slowly at first, then suddenly gave way. The parts were edematous, furrowed, and dark in color. The edema made the coats of the cecum nearly a quarter of an inch thick, and, owing to the same condition, the end of the ileum for two inches felt solid to the touch. On the colon, near what had formed the neck of the intussusception, were patches of abraded peritoneum; one on the outer side was larger than a twenty-five-cent piece, which bled quite freely for a few minutes. The affected gut was irrigated and returned to the abdomen. It was now fortu-

nately observed that the distended ileum had not emptied itself into the colon. The bowel was brought out again, and an examination led to a pull being made on the ileum, when something appeared to yield and the obstruction at this point was overcome. By running the fingers along the ileum toward the colon, the distention of the small bowel was soon completely relieved. All the intestines were replaced, the omentum spread over them, and the wound closed.

The child did not vomit after the operation, nor, in short, had he a single bad symptom. The bowels moved the same evening. From the first day he could not have felt much pain, for when awake and lying on his back he spent much of the time in endeavoring to put first one and then the other foot into his mouth. His parents took him home on the eighth day. Although he recently has had an attack of scarlet fever, he is today a rugged and healthy child.

What appears to me worthy of note is the fact that in both cases the operation evidently did more than relieve the obstruction. The chronic and troublesome irritability of bowel at once and permanently ceased after it was done, though in the one the disease had existed from birth and in the other for fully two months. This should lead one to infer that possibly the cause of the irritation had its commencement in the peritoneal coat.

I have photographs of the patients: No. 1, taken thirteen days, and No. 2, four months after operation, which in each case fairly well shows the site and extent of incision.

In order to emphasize the importance of noting the sudden and severe nature of the initial symptoms from a diagnostic point of view, to show the lump cannot always be detected, and also to make known the possibility of an operation being successful as late as the third day, the following brief notes are given:

About the middle of July, 1893, in consultation with a medical friend, I saw a case on the third day of the attack, but could not induce the family to allow an operation. The child, a male, aged five and a half months, had never previously been ill. The onset occurred suddenly during sleep, causing the infant to awake with a scream. He then turned pale, and the surface of his body became cold and clammy. Reaction was followed by the usual symptoms. At the time I saw him the abdomen was distended and no lump could be detected.

Death took place on the fourth day, and a post-mortem examina-

No. 1.

No. 2.

tion verified the diagnosis, revealing that the lower end of the ileum, the cecum, and all the colon to the upper end of the descending portion were invaginated. The distention of the small intestine had forced the part upward and backward, so that it pressed against the left kidney. This accounts for the reason why the lump had not been felt during life. There were no noticeable adhesions, nor any evidence of sloughing, and reduction was easily accomplished by merely pulling the ileum.

I will now present to you for consideration and judgment a few remarks and suggestions, the knowledge of which, in my opinion, is important, if not to some extent necessary, in order to obtain success in the treatment of invagination in the infant by surgical means.

1. The diagnosis in infancy is not difficult, for the reason that obstruction of bowel by any other means is extremely uncommon, and when it does exist is sure to be owing to congenital defects, or as readily recognized ailments. The sudden and pronounced nature of the onset, the presence of more or less evidence of shock, followed shortly by vomiting, paroxysmal colic, and marked tenesmic efforts, which give rise to non-fecal passages of blood and slime in a child previously healthy, or who has a catarrhal affection of the bowel, rendered the diagnosis for all practicable purposes complete. If in addition to these we can detect an oval tumor in line of the colon, no room for doubt is possible. In consequence of the pliable condition of the abdominal walls at this early age, a lump the size of a pigeon-egg can, in the absence of tympanites, be readily felt by the educated hand.

2. The operation should be performed early, and not when the powers of life are ebbing away. Within twenty-four hours of the commencement of attack, and in the absence of marked tympanites, an attempt at reduction under chloroform probably should be made by distention and taxis; but this trial should not be forcible, prolonged, or repeated, and failing, an abdominal section should immediately follow. In the second day, and later, the operation should be done without a moment's unnecessary delay. The operator should have a practicable knowledge of the details of aseptic surgery as applied to abdominal work.

3. The incision should be made in the median line, either above the umbilicus or lower, according to the position of the lump. When the tumor cannot be defined, let the middle of the incision be at the

umbilicus, for through this the part after evisceration, no matter where situated, may be reached and brought into view. The wound need not be more than from three to three and a half inches in length. The pliable nature of the abdominal walls and the smallness of the cavity render complete exploration with fingers quite easy.

4. Evisceration will be found not only to save time, but to aid very much in facilitating the after-steps of the operation, for it allows more room and permits the large bowel to be readily brought out. I differ from those who state that it is more dangerous to expose the intestines in infancy than later in life. The eviscerated contents of the abdomen should be protected by suitable cloths wrung out of hot water and applied in layers, the outer of which are changed when necessary; or the heat maintained by irrigation with water at a temperature of 102°.

5. Reduction is probably best accomplished by making pressure on the apex of the intussusceptum, while at the same time the intussuscipiens is pulled in an opposite direction. In some instances it is better to break with a probe or other instrument the adhesions at the neck, and then to make firm pressure on the intussusceptum by grasping the whole mass with the hand before an endeavor is made to reduce it.

6. Before the reduced portion is returned to the abdomen the operator should not only demonstrate that the obstruction has been completely removed, but should also empty the contents of the ileum into the large bowel. The last may easily be done by gently stroking the ileum downward with a soft sponge, or after the fashion adopted in my operations. The removal of the material from above the place where the obstruction existed performs important work for an organ, the function of which is sadly impaired, and also greatly hastens the expulsion of offensive and septic matter from the body.

7. The replacement of the small intestine may be facilitated by the surgeon and assistant hooking two fingers of their left hands into opposite sides of the wound, and then lifting the lower portion of the body from the table. Should the intestine be unusually distended with gas, it is my opinion that there is no objection to multiple punctures with clean hypodermatic needles.

8. A point which also applies to most abdominal operations is the rearrangement of omentum. By spreading the omentum over the bowels it certainly prevents adhesion of the gut to the line of

incision. Its lymphatics are admitted to be endowed with more than ordinary power of absorption, and, by extending to the seat of impairment, may in no small measure prevent trouble. The omentum may also happily become attached to a weak point on the affected portion of the bowel, and thus be an agent in preventing perforation.

9. The wound should be sealed in such a manner that the urine of the child cannot possibly reach it.

In conclusion, allow me to add that, in all, six cases of intussusception have come under my personal observation, four in the infant and two in the adult. Three were treated by abdominal section and recovered, and three by non-operative means, with one result—death.

DEMONSTRATION OF A METHOD OF INTUSSUSCEPTION.

[RABBITS.]

BY ROBERT T. MORRIS, M.D.,
NEW YORK.

THE demonstration which I shall make will take but a few moments. It will show you the mechanism of one form of intussusception—namely, ileo-intussusception. I shall produce this intussusception by touching the ileum with a bit of carbonate of sodium. We can easily suppose that ptomaines, from decomposition of intestinal contents, may cause similar spasm of the muscle in the infant. We know intestinal fermentation will cause convulsions in a child, and it is fair to assume that sometime it may produce this form of intussusception which I now show you. When I touch the bowel with carbonate of sodium, you will notice that in twenty or forty seconds there will be a sudden spasm of the circular fibres of the bowel. This spasm will occur quickly, usually in twenty seconds, but in older rabbits it will take about forty seconds. The circular muscle is now in a state of spasm, and the calibre of the bowel is reduced very decidedly. (Here Dr. Morris conducted the experiment, and in about thirty seconds there was intussusception of probably about two inches, it being limited only by the crowding of the mesentery in the intussusception.) The intussusception occurs steadily and quite regularly until the mesentery crowds.

DISCUSSION ON PAPERS BY DRS. MORRIS AND HOWITT.

DR. DUNNING.—I would ask Dr. Morris whether we should leave some of the fluid in tuberculosis of the peritoneum, or whether we should drain it completely under aseptic methods?

DR. MORRIS.—The cases in which I did the most perfect aseptic operations were the ones which did not recover from tuberculosis of the peritoneum after operation, but the cases in which I used drainage, and had allowed the saprophytic or putrefactive bacteria to enter through the drainage-opening, were the ones which recovered promptly.

DR. STONE.—How can you explain the disappearance of certain tumors?

DR. MORRIS.—We know that certain tumors are microbic in orgin, or by analogy we believe them to be, and it is probable that the tumors whose microbes are killed by the toxalbumins are the ones which disappear after opening the abdominal cavity.

DR. HAYD.—I would ask Dr. Morris why these bacteria developing in the peritoneal fluid are not injurious to the patient?

DR. MORRIS.—The peritoneum is capable of disposing of toxic products under most circumstances.

All the questions that have been asked will be found answered in my paper when it is published.

DR. W. E. B. DAVIS, of Birmingham, Ala.—Referring to the paper read by Dr. Howitt, I think there is a good deal of difficulty frequently in diagnosticating these cases in children. I do not think it is an easy matter in many cases. Appendicitis sometimes will simulate invagination. If we can feel the tumor, it will assist us very materially. It is difficult to examine the abdomen of a child unless we administer an anesthetic. We must not be guided by the symptoms of bloody discharge and pain alone, as they are not very reliable. We must feel the tumor. I believe invagination is a much rarer condition than the older text-books taught.

With reference to Dr. Morris's demonstration, it certainly opens up a field of much interest. He has suggested that there may be some germs in the intestine that will bring about, under certain conditions, invagination, which is quite probable.

DR. M. ROSENWASSER, of Cleveland.—The question of diagnosis of intussusception is an interesting one. Dr. Davis has told us that a bloody discharge is not essential, but that a tumor is. About two months ago I saw a case in consultation, in which an acute obstruction of the gall-bladder simulated the symptoms of chronic intussusception. The patient was not a young infant, as was Dr. Howitt's case. The child was about five years of age. For two weeks or more there had been colicky pains and straining at stool, alternating with involuntary evacuations. The stools varied from semi-fluid to fluid. On Wednesday the child vomited quite frequently; on Thursday the bowels became

obstructed. The surgeon who was now summoned reported no distention of the abdomen. The vomited material was purely a mucous fluid, without admixture of bile or fecal matter. There was no passage of gas or stool. The child was brought to Cleveland on Friday. I saw the case Saturday morning. The obstruction had lasted for three days. A tumor was felt in the region above the umbilicus.

There was no bloody stool, no fecal vomiting, no abdominal distention, but the history of the case corresponded to a gradually increasing intussusception, with final complete obstruction. As the obstruction had existed for three days, and the child was in collapse, almost pulseless, with cold extremities, I did not advise operation at that time, but recommended hypodermatic injections of strychnia and rectal injections of brandy. At noon the pulse was better, but the vomiting continued, and the tumor had perceptibly increased in size. When the diagnosis of intussusception was made in the morning it was supposed that gangrene had already set in. The rapid growth of the tumor contradicted this supposition. I therefore advised an operation, and assisted the attendant. We found a perfectly smooth, tense gall-bladder as large as my fist, full of bile. The cause of gall-bladder obstruction was not found. The intestines were collapsed, and there was no sign of invagination. The acutely obstructed gall-bladder must have compressed the duodenum, thus preventing fecal vomiting. The child died after a few hours. This case simulated to a high degree a case of intussusception of the transverse colon. A tumor was present, but there was no bloody stool. The questions arise, whether or not bloody stool is an essential symptom in the diagnosis in these cases, and whether fecal vomiting may be looked for when the obstruction of the bowel is complete.

Dr. Howitt (closing the discussion).—It appears to me that Dr. Davis misunderstands my position. In my paper I confined my remarks strictly to intussusception in the infant under one year of age. At this period of life obstruction from any other cause is extremely rare, and, when it does occur, is generally due to congenital defects which are easily recognized. In a diagnostic point of view, it is very important to note the sudden and pronounced nature of the attack. It frequently comes on when the child is apparently in perfect health, and occasionally even while asleep. More or less evidence of shock is commonly present at the commencement.

In the case cited by Dr. Rosenwasser I may state that bloody discharges are not essential to make a diagnosis, but they were present in all the cases which I have seen. His interesting case hardly comes within the limits of my paper on account of the age of patient.

TREATMENT OF DISTENTION OF THE FALLOPIAN TUBES WITHOUT LAPARATOMY AND REMOVAL.

By FRANK A. GLASGOW, M.D.,
ST. LOUIS.

I PRESENT to you today an article on a very unfashionable topic—namely, the modern treatment of distention of the Fallopian tubes. I might have said conservative treatment of distention of the tubes, but many would immediately say to themselves: "Here is another follower of the old school who is content to do as his forefathers did, and complacently let his patients die because of lack of courage or knowledge of how to perform a laparatomy." For this is what operating in pyosalpinx is considered to mean.

This paper is intended to demonstrate that operation for pyosalpinx does not necessarily mean opening the abdominal cavity. Conservative treatment has been directed toward saving portions of the ovaries and tubes, and has not been in the direction of trying to avoid laparatomy. This conservative treatment is worthy of our highest respect; but, unfortunately, has not been so successful as we could wish. The greatest element of danger was not removed.

Much is now sacrificed to rapidity of cure. Who of us would not rather spend a few weeks or months in gaining fair health than have our abdomens opened and the intestines disturbed, as is necessary in removal of the tubes?

I do not consider that gynecology has kept pace with general surgery in the past fifteen years, and for this reason: when it was discovered that we could cure cases of pyosalpinx by removal of the tube the profession felt very elated, and justly so. Laparatomy became fashionable, and any one who called a halt was looked down upon. So far I have no objection to raise. But why are we not further advanced, except in technique? When the general surgeon found that he could save the life of a patient with an injured

hand or foot by amputating, he amputated, but he was not satisfied. Now comes in modern surgery and teaches him how to save four, three, two, or even one finger. This was certainly a greater achievement than cutting off the hand; hence arose the doctrine, now firmly established, to save all you can.

Why cannot the gynecologist have the same motto? It will detract from brilliant operations and very likely lessen our incomes somewhat. This probably held true with general surgeons, and we certainly are not less honorable than they. If we can save a person by less radical means than section and mutilation, should we not do it? There is not only not the desire to do so among those who make themselves heard loudest through the press, but some actually deride those who advocate the trial of other means. I think that part of this is due to our European education. In Europe, in the great hospitals, the patients are looked upon as material to be shaped and fashioned as the surgeon sees best, irrespective of the patient's feeling. How many laparatomies would be performed if the dangers immediate and the no less important remote complications were honestly laid before the patient? Not many, I am sure. As it is, if the patient dies the friends feel relieved. "It is the will of God, and she is better off anyway." The promises of the operator of "very little danger" are forgotten. Perhaps they feel a little gratitude toward the doctor for acting as executioner. If the patient recovers, Dr. X. is the greatest man in the profession, and she goes around hunting up other victims. I am satisfied that I have not overdrawn this picture.

Now, I do not say all this in order to decry laparatomy in proper cases. I am as much in favor of it as any one, but I know that when a patient leaves her bed after a removal of the appendages, and is able to go about, and is reported as cured, she is often very far from cured. She may have her original pains even worse than ever, she may have intestinal adhesions or hernia, and her life after the cure is not more comfortable than before she added to that surgeon's glory. You all know this to be true, yet, as there is much truth which it is disagreeable to state, you prefer to keep silent.

Now, with regard to my paper proper, as what I have already said is not apologetic but explanatory.

The question is, Can we cure tubal disease in any other way? I say we very often can. We can learn from what Nature unaided

can do. We have all seen cases of acute pyosalpinx, even accompanied with peritonitis, recover from their acute symptoms and, after a discharge has taken place from the uterus, become perfectly well. We have looked for distended tubes later on and not found them. Those tubes were undoubtedly distended and were emptied. We assist Nature to cure in other locations in the body, why not do so here? Catheterization has been tried and found impracticable. Very few have claimed that they could succeed. I doubt if it has ever succeeded in a case that needed it. There were cases reported years back, in which, after a curetting, a discharge of pus took place, followed by recovery; yet members of our profession did not take the hint. It remained for a classmate of mine, W. B. Dorsett, of this Western city, first to advocate the dilatation of the uterine cavity with the object of opening the uterine end of the tube. He advocated this for those cases only where the tube was enlarged close to the body of the uterus, and presented some striking cases of its success. He advocated packing the uterine cornu next to the tube. For myself, I doubt if we can pack one part of the cavity any more than another. Dr. Dorsett's idea seemed to me good, and I tried it, but not in exactly the kind of cases for which he recommended it. I have always noticed that the uterine ends of the tubes which I removed were pervious, also those which I saw removed by others. I furthermore did not consider gonorrheal inflammation as an adhesive inflammation, hence I did not believe the generally accepted opinion, viz., "that the tubes were closed by adhesion after they had been inflamed," to be true. On the contrary, I consider this a false teaching, and probably responsible for our neglecting even trying to open the tubes. Knowing that the tubes are more generally distended at their distal extremity, and that the inflammation is not an adhesive one, we are naturally led to look for the obstruction. We can account for it by swelling of the mucous membrane or uterine tissue immediately around the uterine ends of the tubes, which is the narrowest portion. This I believe to be the site of the occlusion in the majority of cases. The results obtained after packing the uterine cavity can easily be explained on this supposition. If this is so, it is not hard to believe that we may have an emptying of the tube after we have applied antiseptics and pressure to the swollen mucous membrane. I believe another element comes to our aid, and that is a stimulation

of the peristaltic action of the uterus and tubes. This is not difficult to imagine.

I do not agree with Dorsett that it is the actual distention of the cornu which opens the tube, but believe that it is a subsidence of the inflammation, brought about by pressure and antisepsis. I say this, for I have seen the pus discharged after using two elm-bark tents for several days. The tents contained bichloride of mercury.

Dorsett packed the uterus with gauze, sometimes previously dilating and curetting. This packing was renewed every day or so until the flow came. I did this for a number of cases, and then, on account of the pain which is often caused, I sought for a better way, and I believe I have found it.

I prepared a number of tents of elm-bark and sterilized them, some by means of heat and others by an alcoholic solution of bichloride of mercury 1:4000. These I have used almost exclusively for about nine months past. They can be partially broken at frequent intervals, so that they will easily follow the curve or flexion of the uterus. We can use them when the uterus is too sensitive to permit the use of gauze. We can gradually slip in tent after tent, first dipping them in glycerin or water for a moment, until the cervix is full. I now place a wad of cotton, tied with a string, just against the cervix; the tents are cut to a length which will just permit them to enter the os externum entirely without pressing on the fundus; each has a short string attached to it. This is kept up for a number of days, the patient being kept in bed. Sometimes the dilatation causes pain; often none. If, when the uterine canal is large enough to admit the finger, there is no discharge of pus, with relief of the symptoms, I anesthetize and curette. I now pack with gauze and repeat for a number of days.

I cannot at present recall a case of tubal distention where I did not get some discharge after packing with gauze or dilating with tents for some time. Very often a very offensive watery discharge comes through the packing, even soaking into the bed; I do not refer to the slimy discharge from the tents. Every case is not permanently relieved, as the following will illustrate:

CASE I.—Mrs. G.; entered St. Louis Mullanphy Hospital October 12, 1893. She complained of much pain in the right inguinal region. One week previously to entrance had a severe chill. I found enlargement of the right tube, lacerated cervix uteri, and

lacerated perineum. I packed the uterus with iodoform gauze, without anesthesia, for ten days without effect. The treatment was now interrupted for ten days on account of the catamenial flow. Three days after the packing had been resumed a fetid discharge began. The pain disappeared and the patient sat up the next day. The second day after there was no sensitiveness, except high up and on firm pressure; tube infiltrated but smaller, and fundus fixed; patient feels well, and went home on November 6th. She returned on November 30th, having had a chill followed by fever. I found a hard mass to the right of the uterus, firmly attached to the sacrum. The patient was chloroformed on December 2d, and the examination showed the right tube to be, near the uterus, of the size of the thumb; the fundus attached posteriorly. Left side of pelvis free. I curetted the fundus and packed. Two days later a free discharge of watery fluid took place; no pain afterward. I washed out uterus and packed for a few days. She was discharged on December 20th, not quite well, but steadily improving. I heard later that the improvement continued.

The above case was one of the most unsatisfactory and obstinate, hence I give it. I now give you one which was little less than miraculous in the result.

CASE II.—Mrs. H., a private patient. Gave a history of having led a gay life a few years ago, about which time she had a miscarriage and also a gonorrhea. After the gonorrhea she was attacked with peritonitis, and was for a long time in a hospital in New York. She was warned by her physician at parting not to allow any doctor to examine her, for it might cause peritonitis. This was about two years before I saw her on May 21st. I found her in bed with her knees drawn up, suffering intensely; temperature 101½°; exquisitely sensitive all over abdomen and all around the uterus. No satisfactory examination could be made. I ordered hot douches, hot poultices, and salines, and had to give her a little morphine. The next day she was removed to the hospital, where she showed a temperature of 104½°. I began to use bichloride elm-tents at once, and continued the hot applications and salines. By the second day a free discharge of bloody pus came away and the pain ceased Two days later I ceased to use tents and examined her. I now found the left tube small and the right tube the size of an egg. The uterus was pushed to the left and anterior; no pain, no fever, and little

sensitiveness. From now on until May 30th there was a bloody discharge; at this date both tubes were found thickened but apparently empty; there was a little sensitiveness. She left the hospital on June 5th.

This patient became perfectly well, so much so as to go to the night races. On June 26th, as she had some leucorrhea, I introduced a single small tent. This, I very much suspect, interrupted an early pregnancy; for three days she had severe cramps; no tubal distention. The next day a fetid discharge took place. There was now a bloody discharge until I curetted the uterus under anesthesia on June 12th. The tubes were not involved. I packed the uterus for a few days. She is now probably pregnant again, but perfectly well.

I must confess that I was myself amazed at the quick recovery of this patient.

CASE III.—I had one case this summer where, after packing the uterus, I got a discharge, but the patient was not relieved. I now opened Douglas's cul-de-sac, and in separating the gut from the posterior surface of the broad ligament on the right I opened the abscess, which was in the ligament. I packed in a strip of gauze, and, with subsequent drainage, patient recovered completely. This may be considered as a type of cases which the advocates of laparatomy would say were not suited to such a procedure. In many cases it is impossible to tell beforehand whether this is the condition or not. A good rule is to try to empty the tubes, and if we succeed, and the patient still does not improve, we can then, perhaps, open the abscess from below, or perform laparatomy. I prefer opening from the vagina, for I have never lost a case where I did this, nor had hernia result. I have never opened a gut but once, and this I did carefully, as I suspected it to be a gut. I sewed it up and had no trouble.

During the last year or so I have had more than twenty cases of distention of the tubes, and have performed laparatomy on only one. In this case I simply broke up the adhesions and closed the abdomen. All the other cases were either very much improved or cured. I have several on hand at present.

I hope I have said enough to induce you to make a trial of this method of treating tubal distention, and decide for yourselves what it is worth.

I would also recommend you to try slippery-elm tents for the routine treatment of endometritis. Make the tent as small as a match, or even smaller, and dip it into the medicine which you wish to apply to the endometrium, introduce it, and keep it there for several hours with a cotton tampon. You will get a mucilaginous antiseptic application to the endometrium, which is far more efficient than any application made on an applicator. I have graduated from gelatin bougie applications, and want no more of them. They occasionally cause fearful colic on account of their insolubility, and I know of no way of getting them out. Bougies might be made of paper, with a string attached, so that they could be withdrawn like my own tents. These, I imagine, might be of service.

INFLAMMATORY DISEASE OF THE UTERUS AND APPENDAGES OF THE PELVIC PERITONEUM.

I. INTRODUCTORY REMARKS.

WHAT IS TRUE CONSERVATISM?

By WILLIAM WARREN POTTER, M.D.,
BUFFALO.

The scope of limitations of this discussion are so well defined in the several heads given out by the president, that little further need be said by me on that point. Indeed, what I shall have to say will be of a general character, leaving the several special branches of the subject to be presented by the referees, whose names appear under the respective headings.

In introducing this subject, it may not be inappropriate for me to remind this audience of a fact which is well known to every one present—namely, that the pathology of pelvic disease has been entirely reconstructed within the past thirty-five years. In the writings of Bernutz and Goupil, about 1860, appeared the first challenge that the old pathology, described by M. Nonat under the head of periuterine phlegmon, had received. But it is strange that the profession was so slow to accept a pathology based on such sound anatomical principles as is that of Bernutz.

How reasonable it appears today to any one familiar with the work of present operators, when we read that "inflammation of the pelvic serous membrane is symptomatic, and that it is generally symptomatic of inflammation of the ovaries or Fallopian tubes." But it was not until Mr. Tait, some ten or twelve years ago, began to publish his views, that the doctrine of pelvic cellulitis was first weakened, then overthrown, and finally peri- and parametritis were driven out of the pathological vocabulary of modern abdominal surgeons.

Let me further remind you, in this connection, that in 1843 Ben-

nett asserted that inflammation of the cervical canal was the cause, for the most part, of the diseases of women. He declared that from cervicitis came ulceration, displacements, leucorrhea, menstrual derangements, and even ovarian disorders; and he further asserted that by the application of strong caustics to the offending os and cervix all these could be cured. Strange how quick such an absurd doctrine was accepted, and how universally it was taught! For ten years or more this dogma ran riot, until Sims arrested its mad career by addressing himself to repairing the damage caustics had done, and by teaching the uselessness and danger of such treatment.

In the early seventies (I am quoting dates from memory at random) Emmet began to announce the doctrine of pelvic cellulitis, which gained remarkable favor, and it was not long before almost all sexual diseases of women were diagnosticated as pelvic cellulitis as cause or effect, and treatment addressed to the relief of inflammation of the pelvic connective tissue was about the sum total of gynecological work. We were taught that pelvic abscess was often a sequel of pelvic cellulitis, and the pathology of M. Nonat was thus, strangely enough, again revived. History almost always repeats itself!

This brings us to the present period, in which our pathology is drawn chiefly from the operating-tables of modern abdominal surgeons, and from patients who have recovered as results of their masterly work. Today we know that it is impossible to separate the inflammation of serous and cellular tissues in the pelvis, either clinically or histologically; that pelvic cellulitis is a very rare condition; and that pelvic inflammation is in almost every instance peritonitis caused by disease of the ovaries or tubes, or both. We know, too, that frequently recurrent pelvic peritonitis is strongly suggestive of leaky tubes.

The newer pathology under which we are working today further teaches us that pus originating outside of the tubes or ovaries in the non-puerperal state is a very rare condition; that is to say, pelvic abscesses are, speaking generally, pus tubes. Abdominal surgeons have so frequently demonstrated this at their operating-tables, that it is no longer a debatable point in intelligent medical bodies like this.

The sketch that I have made, though brief and roughly drawn, presents the evolution of the most important gynecological sub-

ject that it will be our province as gynecological surgeons to consider. I speak understandingly when I assert its paramount importance. By far the largest number of women in our consulting-rooms today are those suffering from pelvic inflammation in some form, in either its primary or secondary stages, and who justly demand relief from an acute attack, or expect a cure from its residues that are mercilessly ravishing their pelves. Tumors, cystic or solid, malignant growths, tubercular disease, and the like, that constitute grave and undisputed reasons for surgical relief, though observed with a surpassing frequency, are in small minority as compared with the myriads who suffer from inflammatory disease of tubes, ovaries, and pelvic peritoneun.

Formerly at meetings of this kind there was much debate, during which many differences of opinion were evolved concerning the proper line of treatment for these cases. Within the past seven or eight years, however, a greater uniformity of opinion on this subject has prevailed among physicians who may be classified as well informed. They are agreed that in all pus cases—and these constitute the majority—excision and drainage should be the rule; that leaky tubes causing recurrent pelvic peritonitis should be removed; that tentative measures are of little avail, and are only to be employed where radical methods cannot be invoked; and especially that electricity not only does not cure, but is capable of doing positive harm.

Under this increasingly satisfactory state of uniformity of opinion many women have been cured who otherwise would have been lost to the community either in death or chronic invalidism. They either have been made self-supporting where formerly they were a tax upon public or private charity, or have been restored to usefulness in family and social circles. What a pleasant picture to contemplate!

Hardly have we become settled down to a policy that is yielding the largest measure of favorable results, when there comes a mandate from unexpected sources, like a thunderbolt out of a clear sky, crying, "Halt!" "Cease your radical, even though they be curative measures, and adopt conservatism in the management of these conditions." Since it is my purpose to criticise without being personal, I shall avoid the mention of names.

The application of the word conservative in this relation is so

misleading that much harm comes from its use. Every gynecologist and abdominal surgeon believes in true conservatism. We all believe that every organ in the body should be preserved when it can be done without a menace to health or life. We all believe in that conservatism which would only excise such organ or organs as have become dangerous to either health or life through disease, carefully preserving every tissue that can be made of use by the economy, and reducing surgical mutilation to the minimum, consistent with complete recovery. We believe in resorting to the knife only after it becomes apparent that through the knife lies the surest, safest, and quickest avenue to restored health. In other words, all true surgeons believe in operating within the pelvic and abdominal cavities for diseased conditions alone, and not merely to alleviate or dispel symptoms.

When, therefore, men talk about tinkering with diseased organs that are rendered useless for procreation, or utterly destroyed in function and structure, menacing health and life in their progressively destructive disease, it cannot be called properly conservatism. To asseverate that such cases can be restored to health through the employment of rest, massage, electricity, a general building-up of the whole system, and by topical treatment, is to presume upon the credulity of the poor patients, but it scarcely will convince an enlightened and wary profession.

Moreover, in the majority of women suffering from these inflammations, or their sequelæ, there is inability to meet the financial demands of a residence of six months or a year in a fashionable private hospital. This kind of conservatism is an expensive toy that the wealthy may play with, because their very wealth accords them privileges that perforce must be denied the poor.

The woman who earns her bread in the sweat of her face demands the highest exercise of that skilful conservatism which, through the most perfect surgery, may give her the quickest restoration to health by the removal of organs that are not only themselves already destroyed, but which in a progressive destructiveness are invading neighboring tissues, and threatening even life itself. To call any other method of treatment conservative is to misapply the meaning of the word. Conservative means to preserve. Preserve what? Preserve diseased organs and tissues at the expense of health and the menace of life? No! Rather to preserve health

by a careful surgical procedure that shall remove such organs only as stand in the way of recovery.

There is not a man in this presence, I feel very sure, who will not accept this application of the word conservative as the true one in reference to the treatment of the female pelvic organs.

Another very plausible argument that the so-called conservative gentlemen (who, as I said before, shall be nameless) are advancing, is that in doing operations on the pelvic organs women are being unsexed. It is stated that not only does sterility follow the complete extirpation of the uterine appendages, but that the woman also loses all sexual desire. Were this latter absolutely true—which is not, however, the case—it would hardly be a tenable argument. But whenever extirpation becomes necessary, it is for diseased conditions that have already caused sterility and obliterated sexual desire. What woman is there who would not be willing to forego the delights of maternity, and even become a passive partner in coition, for the sake of restored health, after having suffered for months and years with pelvic conditions that render life miserable? To characterize removal of the ovaries as castration, and to stigmatize it as a sexual mutilation that brings contempt, is such an evident appeal to the galleries as to merit no attempt at answer at this time.

But there is another side to this question that is fraught with serious import, and that is productive of great harm. I have observed, and so, I doubt not, has every one here present, that the medical journals throughout the country are taking up this so-called conservative treatment, reprinting its plausible literature, and commenting favorably upon it in their editorial columns. It is a fetching phrase, and the argument is so taking in its method as to win favor with the multitude. Many physicians, especially the younger ones, who do not look beneath the surface or fail to comprehend the motives of these men, accept their teachings and promulgate their dangerous doctrines to their clients on every and all occasions.

The result of all this is not difficult to comprehend. Deserving women who need surgical operations for their cure are frightened away from the operating-rooms of skilful surgeons, hence are prevented from obtaining relief, and thus go on from bad to worse until the end. It would be difficult to predict the harmful results that will undoubtedly spring from one such paper reprinted and

published broadcast in the medical journals; but I venture the opinion that many women already have lost their lives on this account, and that by far a greater number will continue for an untold period of time to suffer mental and bodily woes that unfit them for life.

Freshmen magazine writers and sophomore editors, misled by the clever but dangerous teaching—a teaching that leaves us in doubt as to whether the authors are becoming superannuated or puerile—are rushing into print with society papers or flaming editorials, in which the castration, mutilation, and unsexing of women are decried, and these offensive epithets are flaunted in the face of the profession, until it finally concludes that operations on the uterus and appendages are altogether useless, and abdominal and pelvic surgeons are, for the most part, doing a reprehensible work. For many years there has been a great struggle on the part of these surgeons to establish their work on a proper basis, with that true conservatism at its foundation which means the preservation of human life by the excision of necrotic, useless, and dangerous organs that have already unsexed woman and menaced her life.

Now, must we go all over the argument again in view of these so-called conservative doctrines that are being preached on every occasion and published to the four winds? Must the ground all be fought over again in order to let these suffering women understand, as they had already come very largely so to do, that their only safety lies in submitting themselves to the careful hands of skilful pelvic surgeons who are the true conservators of their health and lives? I hope not.

I trust that this association will on this occasion so put the stamp of its disapproval on the clever but dangerous teaching of these clever though dangerous men as to counteract its ill-effects, and to stem the tide of erroneous, misguided, and hazardous doctrines that are springing up therefrom in the columns of the medical press. Unless I greatly misunderstand the mettle of the men who are to take part in this discussion, and the temper of the material that composes this association, this will be one of the results accomplished at this meeting. And this alone will be well worth all the expenditure of time and money that has served to develop this association into one of the most useful working medical organizations in the western hemisphere.

II. CLINICAL HISTORY.

By CHARLES A. L. REED, M.D.,
CINCINNATI.

THE phase of the subject assigned to me for discussion takes me alike from the pathological laboratory and from the operating-theatre. I am called upon to study this disease uninterrupted and unmodified by treatment. I am asked to portray the course of inflammation of the uterus and its appendages, including the pelvic peritoneum, without reference to those modifying influences which come from therapeutic measures or surgical interference. This task is not an easy one, for the reason that these cases are generally, sooner or later, modified by the certain degree to which they subject themselves; yet I believe, taking the average picture, the composite photograph furnished us in the camera of our experience, we may easily present you a picture which shall safely outline the conditions which we have under discussion.

We have heard this morning of the erroneous doctrine of Fenwick, and that the erroneous doctrine of Bennett is but an illustration of the axiom of the great philosopher, Herbert Spencer, who promulgated the doctrine that there is "a soul of truth in things false, a soul of good in things evil." And there is a soul of truth in the doctrine of Bennett—namely, that nearly all cases of pelvic inflammation have their origin at the cervix. Whether we shall call these cases by the term of endocervicitis or cervicitis, or whatever you may see fit, nevertheless the symptomatology with which I am to deal—and I am warned not to trespass upon the pathological field—begins with a previous history of cervical leucorrhea. Following this there is generally some perturbation of the menstrual function. Ordinarily the symptoms are those of unobstructed dysmenorrhea; yet in a number of cases this particular symptom is not manifested. Later, however, the menstrual pain occasioned by the periodical afflux of blood to the pelvis prior to the onset of the

menstrual flow occasions an increase of distress which forces itself upon the consciousness of the patient. After a while this pain becomes localized to either side of the uterus. There is a heaviness, a dragginess, amounting at times to a sharp and lancinating pain; but after this has been experienced, perhaps through some months, suddenly the patient feels a chill, has a slight sweat, perhaps, and then she experiences her first medication in the form of quinine given for the relief of malaria. But this malaria is intractable. It recurs without reference to that definite periodicity characteristic of the duration of malarial organisms, and after a period, more or less prolonged, of this futile treatment, the patient has been subjected perhaps to an examination.

At this time we come in contact with the objective features of the disease. This phase of the case is one of extreme interest. Upon examination the practitioner experiences—what? There is generally more or less tenderness to either side of the uterus, and there may or may not be tumefaction. The patient occupying the semiprone position, with the thighs well flexed, giving every possible relaxation to the abdominal wall, will not even then permit the examiner to outline definitely the position of the ovaries and tubes in many of these cases, for the reason that there is at this time a very considerable amount of general pelvic engorgement. But the case passes on, the leucorrhea of which she has complained, and which comprised the prominent symptoms, becomes perhaps purulent for the first time. It becomes offensive, and with the manifestation of this change in the uterine discharge there is a certain relief of pain to either side of the uterus. The attending physician may find himself encouraged by this fact, and may think spontaneous recovery is in sight, and, allured by this particular view, he may withhold any active interference with the case.

After a while there is a repetition of previous experience, only to a much more intense degree. The chill comes now with unmistakable severity, the fever is of the most pronounced character, and then come the aggravating and exhausting sweats. This experience is again repeated within a short period. Then follows an increase of pelvic tenderness, an increase of all the physical discomfort. Later on there will be lassitude, exhaustion, disappearance of color from the cheeks and lips; the nails become blue, and all the pronounced features of anemia become manifest. But while

this symptomatology is being observed, deep-seated changes are going on. The tumefaction within the pelvis is now most pronounced. There is no repetition of this gush of purulent leucorrhea. Then comes the culminating sweat following the chill and the fever, and later prostration amounting to collapse. Then comes abdominal distention leading to a fatal infective peritonitis. This is the picture of these cases when left to themselves, or even when they occasionally come under our observation at such a distance we cannot give them that relief which our art affords them.

There is another type of cases. The young married woman, or the courtesan, for that matter, experiences a sudden discharge of a purulent character. She finds pelvic tenderness at once occupying the entire cavity. This increases in a few days until there are manifest evidences of progressive invasion from the cervix through the mucous tract, until infection reaches not only the uterus, the endometrium, and the lining membrane of the adjacent Fallopian tubes, but the peritoneum, and active symptoms become manifested, which lead to a speedy fatal result. I have had occasion to be called upon in the eleventh hour in these cases with precisely this history. We are called upon to consider these cases frequently as to their gradual and chronic development. Let me remind you that this invasion may be active, may be gallopy.

Then we have another type of cases—those subjected to curettement following a miscarriage. The patient has been effectually vaccinated on the inside of the uterus by curettement for the relief of so-called purulent endometritis. A sharp curette has been used, the endometrium has been fairly well scraped, the lymph channels have been opened, and there has been invasion of them until we have diffuse tumefaction of the pelvis, not localized or lobulated, but that general diffuse tumefaction which indicates general invasion. This is the dangerous form of pelvic inflammation, and when left to itself results in that serious form of phlegmon which may give rise to the liberation of septic elements into the general circulation, and a fatal septicemia may result. These are some of the indications or outlines in brief of the actual clinical history of these diseases when left to themselves.

III. CAUSATION AND PATHOLOGY.

By L. S. McMURTRY, M.D.,
LOUISVILLE.

In this discussion I shall use the term pelvic inflammation to embrace all those inflammatory diseases which involve the Fallopian tubes, ovaries, and pelvic peritoneum. The uterus is almost invariably involved in the process, its cavity being, as a rule, the point of departure and route of access of the inflammation. The inflammatory process, beginning in the uterine cavity, extends along contiguous mucous surfaces through the Fallopian tubes to the peritoneum, often destroying tissues, and invading parenchymatous structures in its advanced course. The salpingitis, peritonitis, ovaritis, exudation, adhesions, pyosalpinx, hematosalpinx, hydrosalpinx, ovarian abscess, and lesions of the bowel, are but resultant factors in the disease, corresponding to the intensity and stage of inflammation and structures involved. The disease is one and the same, of which these are the varied expressions, and must be considered as a single disease, having numerous stages and sequelæ as well as numerous causes.

Pelvic inflammation originates, practically without exception, from septic infection. Septic infection may be specific or traumatic, including among traumatic causes the wounds of childbearing and abortion. Puerperal infection exceeds all other etiological factors in this disease. I have long been convinced of this fact from my own observation, and believe it is mainly corroborated by the investigations of others who have carefully studied the subject clinically. The open surface left by separation and extrusion of the placenta is peculiarly liable to infection, as is also the intrauterine surface after abortion. The enlarged lymphatics and hypertrophied bloodvessels, torn across and gaping, the process of degeneration following the completed term of pregnancy, almost pathological, offer a most receptive surface for absorbing, developing, and dif-

fusing the slightest contamination by septic matter. An amount of septic matter will suffice to infect a woman under these conditions which would be resisted and overcome by the normal non-gravid uterus. Moreover, the retention of portions of placenta partially detached and deprived of circulation renders infection even more easily accomplished. There is abundant evidence that many puerperal women are infected with gonorrhea, and that both the puerperal and specific causes may coexist in the same individual. Thus, a woman at term may have a gonorrheal vaginitis, from which intrauterine infection may readily obtain. This conjunction of specific infection with the traumatism of labor has been termed *mixed infection.* It is by no means uncommon.

A different class of traumatic infections is that of certain surgical operations and manipulations upon the uterus. Such are the injury and contamination of sponge-tents, of steel dilators, and operations upon the cervix and within the uterine cavity. The traumatism by which tissues, rich in lymphatic distribution, are exposed to infection by foul discharges and dirty instruments is often the initial step in severe grades of pelvic inflammation. It is not the traumatism *per se* which begets the inflammatory process; it is the admission of septic material. The inflammation is prevented by a healthy, clean mucous membrane and a proper aseptic condition of instruments.

When a woman becomes infected with gonorrhea the vagina is at first the seat of specific inflammation. There is a continuous membrane by which the inflammatory process can readily spread to the peritoneal cavity, and the virus often traverses this entire membrane with amazing rapidity, producing suppurative salpingitis and peritonitis within a brief period of time. As a rule, however, the inflammation exhibits itself in recurrent attacks, and the protecting peritonitis limits and encloses the infected area through long periods of subacute and chronic disease. Modern pathological researches have combined with the disclosures of modern pelvic surgery to demonstrate the active agency of gonorrhea in the causation of pelvic inflammation in women. This, together with all other important pathological features of pelvic inflammation, was recognized, recorded, and announced thirty years ago by Bernutz and Goupil, but only to be discarded by the profession until recently, when operative surgery demonstrated during life the truth of the

observations which Bernutz made post-mortem. My studies do not lead me to concur with the view held by some, that an attack of gonorrhea is never cured. I believe that in numerous instances both men and women make perfect recoveries from this disease—that is, get well without extension to the membranous urethra and bladder in the one, and without invasion of the Fallopian tubes in the other. It is, however, a most serious disease in both sexes, and plays a conspicuous part in the causation of pelvic inflammation. No virus to which the female genital tract is exposed is so active and destructive as the gonorrheal. It traverses the mucous membrane with rapidity, invades the peritoneum, destroys tissues, forms sacs of pus, and often terminates fatally.

The ovaries and Fallopian tubes are situated on the posterior surface of the broad ligaments, and the fact that adhesions and exudates are more commonly found posteriorly than anteriorly, shows that the mode of invasion is by continuity of membrane, rather than by vascular routes from cervix to broad ligament. Syphilitic ulcers of the cervix may be the cause of pelvic inflammation by transmitting infectious products along the mucous tract or lymphatic channels.

Tubercular salpingitis deserves mention among the causes of pelvic inflammation; and the eruptive fevers, especially scarlatina and variola, are believed by some to be accompanied by salpingitis. A sudden suppression of menstruation is one of the rare causes of pelvic inflammation.

In a certain proportion of cases, pelvic inflammation appears as a complication of other morbid conditions. Such are the cases wherein inflammatory lesions are associated with neoplasms of the ovaries and uterus. Rupture of cystic growths, the irritation of solid tumors from pressure, and obstruction of the Fallopian tubes, with retention and extrusion of secretions, with hypertrophy of epithelial and interstitial elements, are conditions commonly associated with localized peritonitis complicating neoplasms of ovaries and uterus. Imperfect development and malformations of the uterus and appendages may sustain a causal relation to pelvic inflammation.

In studying the lesions of pelvic inflammation, the Fallopian tubes are of the greatest importance, since these organs are the route of access and focus of the inflammatory process. Numerous classifications have been arranged to indicate the various grades of sal-

pingitis, such as catarrhal, cystic, purulent, acute, chronic, and the like. These variations are in reality but anatomical limitations of a single pathological process, determined by the character of infection and Nature's ability to resist its access by confining its area. At the outset there is congestion, followed by effusion. The effusion is from the surface of the mucous membrane and into the underlying connective tissue. The rapidity and extent of this process depend upon the virulence of the attack and the condition of the parts. The tubes become filled with serum, which may drain into the uterus or discharge through the fimbriated extremity into the peritoneum, or it may be retained by closure of both these openings. The exudation into the tissues varies, making the tube walls more or less thickened by infiltration with cells, in some instances penetrating the walls and directly involving the peritoneum. The tube becomes adherent to the uterus and ovary, the broad ligament is matted down and the fimbriæ covered over. Should Nature's efforts avail to confine the effusion by sealing the fimbriated extremity of the tube, a hydrosalpinx will be formed. In some instances the inflammatory process is characterized by hemorrhage, forming hematosalpinx. Resolution may take place later on, either to a complete or incomplete degree. If the process terminates in suppuration, a pyosalpinx will be formed. Should the contents leak through the fimbriated opening into the peritoneum, whether pus has formed or not, active peritonitis will be established. This process is conservative, Nature endeavoring by adhesions to shut off the general peritoneum and limit the inflamed area. The characteristic inflammatory products of a serous membrane are deposited; later the serum may become absorbed, and the exudate remain to undergo organization or suppurate. When this process is characterized by extreme virulence, tissues are infiltrated and destroyed by the very intensity of the process, the involved tissues being so friable as to break down under slight manipulation. This process may involve not only the tubes but the uterus and contiguous portions of intestines, causing the uterus to slough and the walls of the intestines to give way.

The proximity of the fimbriated extremity of the tube to the ovary involves the latter organ, and it becomes attached by adhesions to the tube. The infection is thus transmitted to the ovary, and when suppuration occurs ovarian abscess is conjoined with pyosalpinx. Nature, always prolific here in her resources, throws

out layer after layer of exudate in her efforts to limit the suppurative area, and in time an immense thick sac is formed, enclosing the abscess cavity originating in tube and ovary. The breaking through this wall is signalized by an outbreak of peritonitis corresponding in gravity to the area invaded, or by a discharge from bowel or bladder, or externally through the abdominal wall, as the place of rupture may happen to occur. The phases which pelvic inflammation may assume are widely variable. Salpingitis may obtain in all grades, from a mild catarrhal inflammation to pyosalpinx. The peritoneum may be very slightly involved, and the ovary not at all. The inflammatory process may run its course and subside with slight adhesions, just as a pleurisy often behaves. It may, however, continue indefinitely in a chronic form, or apparently subside altogether, to reappear after the manner of recurrent attacks of appendicitis. In the chronic form of the disease the ciliated epithelium of the tube is destroyed, thus crippling or destroying its functions as a conduit from ovary to uterus. The fimbriæ are also destroyed. The lumen of the tube may be closed at points, forming in time multiple strictures. This prevents drainage of the tube, and mucopurulent material accumulates between the strictured points.

In the progress of the chronic inflammatory process changes take place in the walls of the tube, known as chronic interstitial salpingitis. These changes consist in infiltration of the walls of the tubes with cells, and degenerative changes. When this advances to suppuration the walls become soft and cheesy. In a certain proportion of cases of long-standing inflammation, especially when characterized by repeated abscesses, the tubes and ovaries may be destroyed, leaving only vestiges of normal structures in the form of a membranous band.

Pathologists have indulged their fancy in applying various terms to the adhesions, such as "spider-web" and "bread-and-butter," forms illustrating the great variety of Nature's handiwork under the varying conditions which modify inflammation within the pelvis. These modifying conditions relate to the character and intensity of the infecting material, the systemic condition, environment, and treatment of the individual.

In acute inflammation the effusion may consist largely of serum, with varying additions of lymph; the serum being absorbed, the inflammatory area is covered with thick deposits of lymph. This

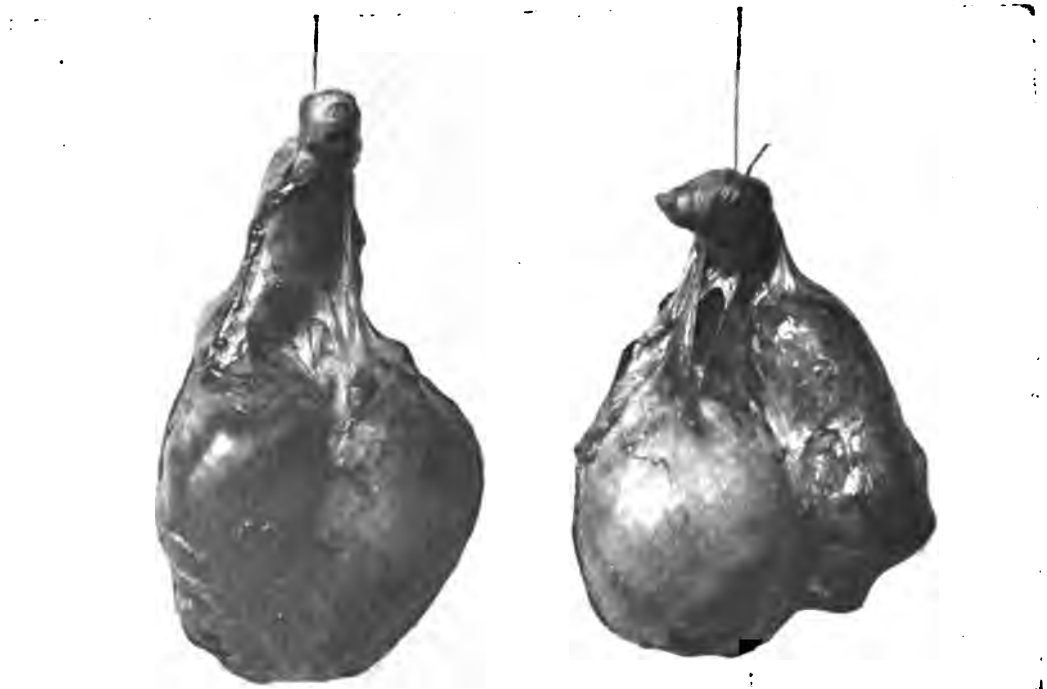
exudate forms the adhesions, which may be soft or firm as the inflammation may be acute or chronic. Advancing infection may break down these deposits. Partially broken-down lymph is very commonly associated with acute suppurative salpingitis. The lymph may break down at different points, thus forming pockets of pus. The pockets thus formed may vary in size, from the smallest to a universal pelvic abscess bridged over above by the omentum and intestines. The limitation of suppurative force by firm organized exudate, and burrowing of pus along intermuscular cellular spaces in seeking an outlet, has caused many close observers to mistake this condition for an extraperitoneal cellular abscess.

The illustrations accompanying this paper were photographed from specimens removed by the author, and show the lesions of advanced pelvic inflammation. Fig. 1 is a specimen of double hydrosalpinx and cystic ovaries. Fig. 2 illustrates double pyosalpinx associated with cystic ovaries. Fig. 3 is a specimen of large pus sac formed by fusion of pyosalpinx and ovarian abscess with successive layers of plastic exudate; a parovarian cyst occupied the opposite side of the pelvis. A description of the systemic phenomena associated with these lesions, as well as the mode of termination with and without surgical interference, is beyond the limitations imposed by this discussion.

FIG. 1.

Double hydrosalpinx and cystic ovaries.

FIG. 2.



Double pyosalpinx and cystic ovaries.

FIG. 3.

Parovarian cyst.

Pyosalpinx and ovarian abscess.

IV. DIAGNOSIS AND PROGNOSIS.

By J. F. W. ROSS, M.D.,
TORONTO.

MUCH that I might say regarding this condition is embodied in the paper I have already presented to this Association.[1] My remarks will therefore be short and, in many respects, imperfect.

The diagnosis of acute inflammatory disease of the uterus is not difficult to make. Usually the patient, after some mechanical injury for the production of miscarriage, or the introduction of sepsis following miscarriage or labor, or through gonorrheal infection, is seized with a chill, rise of temperature, increased pulse, and in many cases with severe pain in the pelvic region. In some of the cases, however, the pain may be almost entirely absent, and in those cases in which this inflammatory condition follows labor I have looked upon this absence of pain as a bad omen. The cases of phlebitis affecting the uterine sinuses are usually the ones that prove most rapidly fatal by the production of secondary abscesses, and in them this pain is usually wanting.

With the invasion of the tubes and pelvic peritoneum there is an accession of pain, and if the inflammatory condition spreads the entire abdomen becomes tender. In some cases the bladder is secondarily implicated, and we have painful micturition; in others the rectum is secondarily implicated, and we have painful defecation. In many cases of acute metritis following gonorrheal infection I have observed a sudden onset of what cannot be looked upon as menstrual flow, because it frequently appears in an intermenstrual period. In some cases this discharge may last for two or three weeks, and if the inflammatory condition becomes chronic the flow may at a later period become excessive. In fact, in many cases of inflammation of the uterine appendages one of the important symptoms is menorrhagia.

[1] Personal Experience with Pus Tubes, p. 245.

Let us suppose that a case progresses after the cessation of the metritis and the cessation of the acute inflammation of the tubes. The chronic inflammation has a tendency to remain in the tubes. They may not be perceptibly increased in size, and may yet contain very poisonous, grumous pus in small qnantity. I have seen such tubes, with only half a teaspoonful of such fluid in their interior, when operating for acute general peritonitis following sudden displacement of the adherent fimbriated end of such a tube.

Under these conditions inflammatory disease is difficult to diagnosticate, as it runs a slow course, and there is nothing to be detected by the finger except tenderness, hence the physician must rely upon the other clinical symptoms. Given a patient in whom either one or both ovaries are somewhat fixed, the patient being able to walk around and attend to her daily vocations, it is necessary to provide her with a clinical thermometer, or to have her admitted to a hospital where she may be carefully watched, before one can give an intelligent opinion regarding the case. I meet with a large number of these cases of progressive salpingitis in fallen women who come under my care in the different hospitals. The temperature in such cases usually runs a somewhat erratic course, and intermittent rises will be observed if the cases are watched for a considerable period of time. These elevations may last for only twenty-four or thirty-six hours, and the temperature will then drop to about 99°. The patients complain of pain, and this pain is intermittent in its character. In some cases dysmenorrhea is present; in other cases the diagnosis is quite easy. The floor of the pelvis feels hard and boggy, and the uterus is fixed. In other cases the uterus may be to a certain extent movable, and masses will be felt on one side or the other of it or behind it. In many of the cases in which there are large pus tubes within the peritoneal cavity there may be no particular rise of temperature.

The diagnosis of the cases in which there is but little to be felt in the pelvis, as we have already said, is difficult, and such cases are likely to be mistaken for cases of so-called ovaritis and for cases in which the ovaries are tender, owing to some anemic or other condition of the system. Neurotic women and anemic girls frequently suffer from this ovarian tenderness. Such tenderness exists without the presence of any actual disease, and these cases should never be

operated upon. If they are observed closely for a time, no acceleration of pulse or rise of temperature will be noticed.

The pus tube may be mistaken for a uterine fibroid. I have made this mistake in one case myself. There was no pus in the interior of the tube, but its wall was enormously thickened and in reality was a solid mass with a small central cavity. The pus tube may be mistaken, if adherent to the anterior abdominal wall, for a growth arising from the rectus muscle. I have one such case convalescing after operation, from whom I took a large pus tube that had become adherent to the anterior abdominal wall and from which pus had burrowed into the sheath of the rectus muscle.

During the development of pus tubes patients are often supposed to be suffering from typhoid or malarial fever. The diagnosis in such cases should be made with an expert finger in the vagina. This shows the importance of the vaginal examination in all cases of prolonged fever.

PROGNOSIS. Many cases of disease of the uterus and appendages become entirely well without operative interference. It is fortunate that this is so. A large number of the cases progress, however, and require for their relief surgical measures. There is an intervening class in which the disease seems to be in a state of abeyance, but likely to be lighted up again at any minute. In the cases that suffer from relapses nothing will relieve them but the removal of the tubes and ovaries. In cases suffering from large pus tubes cure is dependent upon the removal of such tubes. The drainage of pus tubes I consider to be bad practice. What applies to the pus tube applies equally well to the septic hematoma of the ovary and ovarian abscess.

In speaking of the prognosis of such cases it is impossible to do so without overlapping to a certain extent the subject of treatment.

For pus tubes interfering with health and causing intermittent attacks of inflammation there is but one treatment—namely, removal by surgical means. The results after this operation are perfect, but the operation is attended with considerable danger. The dangers certainly are much diminished if the patients are placed in experienced hands. The patients do not grow fat and ugly, nor become insane, nor lose sexual vigor when it has been present before operation, nor grow a beard or moustache, as is occasionally remarked by laymen. They leave the invalid chamber

and become useful members of society. They lead active lives and look after their homes. Many of my cases are now doing their own work, as they cannot afford to keep a servant. Fallen women usually return to their former surroundings.

When inflammation of the uterine appendages kills it does so for want of operation, but it kills slowly, and before producing death causes an enormous amount of suffering. Many patients may live long enough to have sinuses running forward through the abdominal wall or down through the pelvic floor discharging from large pus tubes. These sinuses will not heal, and the patients go from bad to worse. A condition of chronic septicemia sets in, the patients become emaciated and confined to bed, bedsores form, and they slowly but surely die.

V. TREATMENT.

By MARCUS ROSENWASSER, M.D.,
CLEVELAND.

An inflammation of the uterus and appendages independent of the pelvic peritoneum and of contiguous parts of omentum and intestines has no existence in fact. Based upon this view of the pathology, the treatment resolves itself into that of pelvic peritonitis, acute and chronic.

If girls have been taught to avoid exposure and nerve-strain during the early stages of menstrual activity; if women have been protected against specific infection by sensualist, ardent lover, or unfaithful husband; if abortion and childbirth have been managed according to modern ideas of cleanliness and asepsis, and placental remnants have been thoroughly removed; if operations and minor manipulations have been done according to present views of scrupulous care and prevention—if all these precautions have been taken, pelvic inflammatory disease, as one of most frequent and serious ailments of women, would become extinct or exist only as one of the rare sequelæ of exanthematous or tuberculous disease.

1. Acute pelvic peritonitis. (*a*) *Medical treatment.* When the immediate cause—foreign body, decomposing tissue, or germ-laden material—has been removed from vagina or uterus, the parts cleansed and disinfected, and the bowels have been well purged, rest in the horizontal position, with hot fomentation or ice bag to the hypogastrium, is the essential feature of the medical treatment.

The temperature is not often excessive, hence seldom requires attention. The pulse may, however, be rapid and weak, indicating the need of stimulants and strychnine.

In most cases pain can be controlled by the treatment already indicated. Some, especially neurotics, require opiates from time to time, best given by suppository or subcutaneously. Opiates should be used sparingly, and should be early discontinued.

The fact that the inflammation is more or less limited to uterus, ovary, or tube, does not in itself imply the use of local applications. Hot vaginal douches may be used when well borne, not otherwise. Small blisters to the inguinal region are of no value. Frequent repetition of saline laxatives is followed by relief of pain. The bromides serve a good purpose in allaying reflex nervous manifestations.

Giving iodides and mercurials with the idea of dissolving exudates is decidedly wrong. Nature throws out plastic material as a bulwark against general peritoneal invasion. Exudate is as essential in peritonitis as is callus in fracture. It is the rainbow that indicates the cessation of the inflammatory storm. It is the first harbinger of hope in our dark hours of doubt, worry, and despair.

(*b*) *Surgical treatment.* Curetting and free drainage of the uterine cavity, before infection has spread to the tubes or beyond, will in many cases limit or abort the inflammation within the uterus. But the utility is questionable, nay, it is often positively harmful, when the appendages have been drawn into the inflamed area. Nature is then busy sealing the tubes and repairing leaks and overflow. To disturb and pull down the uterus, and thus to sever the web and meshes of adhesions in process of formation, is to invite general peritonitis. Better keep hands off.

Abdominal section is called for when symptoms point to formation of abscess, either within a pelvic organ or within a circumscribed space in the pelvic cavity. Should such abscess rupture section is indicated if it can be performed immediately, or within the first few hours before general inflammation has developed. In the latter event results are not encouraging.

Guided by my own experience (after general inflammation has developed), I might yield to the request to open the abdomen and drain, if the pulse were small and rapid and there were vomiting and increasing tympanites. The operation would, of course, be a forlorn hope. There would be nothing to lose. On the other hand, if neither tympanites nor vomiting was present, despite small, rapid pulse, I would prefer to stimulate and push strychnine to the point of toleration; because, while such symptoms indicate shock, they also indicate control of the septic process. To interfere by the additional shock of operation and by disturbing protecting plastic formation is not rational. I believe the chances of recovery in such event are better by medical than by surgical treatment.

2. CHRONIC PELVIC PERITONITIS. (*a*) *Medical treatment.* During the subacute period, as also early in the chronic stage with lingering tenderness, masses of exudate, and occasional rise of temperature, rest in bed with attention to bowels, to feeding, and to hygiene, are still the essential factors; and rest, in its broadest meaning, continues the elementary principle of treatment even after the patient is about. Boroglyceride or ichthyol tampons of lamb's wool, by supporting the pelvic diaphragm and depleting the bloodvessels, hasten recovery in some cases. Gentle pelvic massage may be of value in softening adhesions, and may thus aid in the reposition of fixed organs. Tonics, cod-liver oil, and general massage and electricity will aid in restoring faded blood, weakened nerves, and wasted muscles. Local electricity may be of temporary benefit. As a resolvent of exudates it has proved a dismal failure at my hands after faithful and patient trial. Repeated blisters or other counter-irritants over the hypogastrium serve the good purpose of temporizing. They impress upon the friends and the patient the exhaustive completeness of the attendant's efforts to cure.

There are some cases whose condition is uninfluenced by medication or treatment. They remain chronic invalids, fluctuating between fair, though feeble, health and spells of pain and nervous reflexes. They are comfortable for a time, but break down on over-exertion, exposure, or violent emotion.

(*b*) *Surgical treatment.* Curetting the uterus was at one time considered unsafe when tubal inflammation was a complication. Experience has since taught that, carefully done, it may be a means of improving the womb and appendages. The improvement is often preceded by increased tumefaction and tenderness of the appendages, which are slow in subsiding, sometimes many months, but which ultimately do disappear, leaving the patient symptomatically cured, the backache, dysmenorrhea, leucorrhea, painful locomotion, and nervousness all gone.

Even in pyosalpinx curetting has been advocated and practised with a view to establish drainage by the uterine route. A study of the pathology of suppurating appendages will stamp the procedure as one partaking more of the empirical than of the scientific.

Abdominal section is today the recognized treatment for removal of suppurating appendages, either singly or bilaterally, or together with the uterus if the latter is also infected or honeycombed with

pus. Section is indicated for thickened, enlarged, or cirrhotic appendages that cause prolonged dysmenorrhea, local suffering, or aggravated reflex disturbances. Firm adhesions causing much distress by displacing pelvic organs can be relieved more safely by section than by other more crude methods. If there be good grounds to suspect that sterility is due to displacement or constriction of appendages by adhesion or bands, section will best accomplish release and cure. Finally, the sinuses and fistulæ that remain after the discharge of so-called pelvic abscess, and resist efforts to cure by drainage and injection of irritants, may be cured by removing the cause, located in the remnants of suppurating tube or ovary.

VI. TREATMENT.

By A. VANDER VEER, M.D.,
ALBANY.

I REGRET to say, in regard to the treatment of inflammatory diseases of the uterus and its appendages and of the pelvic peritoneum, that I have to blush and offer an apology for my profession. I have no sympathy for that class of practitioners who still indulge in the uterine sound to locate the uterus or the possibility of a dilated tube. I know that that kind of practice still obtains, and there are those who apply Churchill's tincture of iodine, or some preparation of it, to the cervix; or they take a probe, wrap a bit of cotton around it, dip it in carbolic or nitric acid, and introduce it into the uterus for the cure of some inflammatory condition connected with the uterine appendages.

The ground of treatment has been very well covered by Dr. Rosenwasser. We should make an earnest effort in all of these cases to learn the cause of the inflammatory trouble. A young girl is brought to us, or a young woman, who has been an invalid for five years. She is compelled to give up school. In such a case we must carefully inquire into her condition, learning as to what may be the actual cause of the inflammatory condition that exists about the pelvis. The questions will occur to you: Has she had for three or four years a persistent leucorrhea? Has she become infected in some manner with a purulent discharge, not necessarily specific, but by some form of abscess or sinus that has existed? I have found in one case a well-marked inflammatory condition of the pelvis due to an uncured ischio-rectal abscess that at one time discharged into the vagina. This condition should be looked into with the utmost care and caution. Irritations about the rectum should be carefully looked for in young girls who present a condition of this kind.

As to the condition of the appendages in a young girl in early

life, we should ask ourselves the questions: Has Nature accomplished her work well? Has she developed the uterine appendages in a proper manner? Has the girl, from the time the menstrual act was noticed, had a normal menstruation? In many cases we will find that menstruation has been irregular; that the patient has always suffered; that she has had perhaps an abscess, an ischio-rectal abscess, or an ovarian abscess, which has escaped through one of the lymph channels, through which Nature will often make an exit for the pus. She may have an undeveloped ovary or tube on one side. These causes should be looked into carefully before carrying out an intelligent line of treatment.

As to the cases occurring in the adults, married or unmarried women, these must also be examined with the utmost care. If the patient has borne children, the condition of the cervix should be examined with great care. That noble man who has been referred to here so kindly and generously by those Fellows who have read their papers in reference to his work—Dr. Emmet—has done great work for us in reference to the lacerated cervix. The condition we seek may rest within the cavity of the uterus, while the tubes are absolutely free from disease. There may be no trouble outside of the cavity of the uterus. But you begin with your tincture of iodine, with your various applications; you begin curettement, and perhaps then you light up an inflammatory condition, and the patient is finally made worse by the line of treatment carried out. Make a careful examination, and if the cause be a lacerated cervix it must be repaired.

There are cases, as has been stated by some of the previous speakers, which present conditions that are extremely difficult to diagnosticate. The patient has gone along fairly well, and has had two or three attacks of a mild form of pelvic peritonitis. During the next attack an exudate is thrown out. We feel when we see these acute cases, or when they are sent to us and go into the hospital, that they present some difficulties. It is not an easy matter to tell whether the hard masses we meet with are benign or malignant. These cases should be carefully classified as to treatment.

I must say I do not feel like condemning the curette entirely, for I believe it is of service in some cases. When we have a high temperature, with a rapid pulse, we should not go inside the uterus with a sharp curette. Do a gentle form of curetting, then pack

the uterine cavity with iodoform gauze, and the patients will be benefited. In two or three days you may have a case of pyosalpinx that needs a more radical operation. You need not ignore the use of the curette entirely. It may be used in cases of endometritis. In the submucous form of polyp you can perhaps use the sharp curette. No one can cover the conditions present in these cases by one single examination. The cases should be carefully studied and then the line of treatment selected. Given a case in a clean woman, married or unmarried, with a clear history, the line of treatment can be looked upon with more satisfaction than one in which you have doubt as to the specific origin of the trouble, or in which you have reason to believe there is a portion of retained placenta. These cases require a more thorough line of treatment.

When a case comes to us with an inflammatory condition of the pelvis I do not think we are justified always in saying to the patient or to her friends, that the uterine appendages must be removed. The condition may be outside, when operation is not necessary. On the other hand, how many of you have seen those cases that have passed from office to office and from city to city, where there has been absolutely no relationship for years and years on the part of the husband and wife, perhaps, the husband having spent his hard earnings from week to week in going to this and that doctor, they telling him they could cure his wife without operation; and finally the case goes into the hospital with all the complications, with all the sorrowful conditions present of immense pus tubes opening into the rectum—the saddest of all conditions. Then we are to operate. It is unfortunate that we do not get these cases earlier. I do not wish to dwell upon this phase of the subject further.

There are cases where the cornu of the uterus is in a thickened condition; bimanual examination will not cause the woman to complain, and the uterus is somewhat fixed. In these cases I believe we can do some good by local thorough douchings, putting the woman under a sensible, cautious line of treatment. The old suppository of lead and belladonna, to be held there and renewed, the patient being kept absolutely quiet, will materially benefit these patients. Furthermore, we must look into the condition of the bowels, see that they are thoroughly emptied every day. We have patients that come to our office for examination, and we find the

bowels have not moved in two or three days, and they expect a careful examination of the pelvis to be made. The condition of the bowels, therefore, must be studied carefully, as well as the bladder. We may be able to carry some of these cases through successfully by this line of treatment without removal of the appendages, but the vast majority of cases of pelvic inflammation will ultimately necessitate such an operation.

VII. TREATMENT.

By J. HENRY CARSTENS, M.D.,
DETROIT.

It seems to me the treatment must be divided into the preventive and curative. After listening to the able remarks of the gentlemen who have preceded me it is clearly demonstrated to any reasonable person that nearly all of these cases can be prevented by proper treatment at the outset. If we can diagnosticate a case of gonorrhea early and treat it properly, there will be no infection of the tubes. But the proper treatment of a woman with gonorrhea does not consist in giving her a little wash, an injection of borax, and letting her use herself a douche of a quart of water. If there is any doubt about the case being due to gonorrheal infection, we can easily examine or have examined some of the pus, when we can find the gonococci, if they are present, and thus make the diagnosis clear. If a woman comes to you with a sudden attack of leucorrhea, with burning in passing water, it is no doubt a case of gonorrheal infection; and if it is properly treated—not by douches, but by cleaning out the vagina, the uterus, and cervix, and applying iodine, corrosive sublimate, and other germicides thoroughly and effectively—you will prevent invasion of the uterus and of the Fallopian tubes. This is not the work of the specialist, but of the general practitioner, because personally I never see these cases, nor do I think any of my friends do, until late. *The practitioner who encounters these cases early must treat them properly.*

The other cause of these inflammations is puerperal infection. That means what? Bad midwifery. It means dirty fingers, dirty instruments; and if the general practitioner will be aseptic and deliver women properly, these women will not be liable to have puerperal infection and puerperal salpingitis, and there will be less use for the abdominal surgeon. The most frequent cause is puerperal infection following miscarriage; and here I cannot agree with

one of the speakers who told of scraping or curetting the uterus until it is literally vaccinated, for by so doing we furnish an opportunity for infection with micro-organisms. I use a blunt curette in cases of miscarriage, dilating the uterus, introducing my finger, removing the afterbirth, then cleaning out the cavity with a dull instrument. If we scrape the mucous membrane and produce open lymph channels, then follow that cleaning out with the application of pure carbolic acid to the lining mucous membrane, every germ within the cavity will be killed. This application also acts as a caustic, closing up the lymph channels and those bloodvessels which absorb the infective material, thus making the uterus aseptic. If this plan is carried out, women will not have puerperal infection, they will not have pus tubes, and consequently our occupation as abdominal surgeons will be gone. I hold that if we teach the general practitioner constantly, in season and out of season, the necessity of these points, we will do more to prevent the causation of these troubles than anything else I know of. Other causes of salpingitis are rare.

Dr. Rosenwasser has covered the ground of treatment so well that I shall be brief in any further remarks I may make. I do not see any of the cases that require palliative treatment. One of my students, out in the country, has treated a woman for a year or more with tampons, hot injections, poultices, painting the parts with iodine, blistering, administering alteratives and tonics, etc., and she comes to me. What shall I do? Repeat his treatment? Why, that would be most absurd. I have given him good instructions, and he can carry them out as well as myself, and there is nothing left for me to do but to cut down and remove the diseased tube or ovary, whatever it may be. I do not wait very long in these cases.

I get an acute case occasionally, and the question arises, What shall I do? Shall I operate immediately? No. I judge each case by itself. If I see it is a case that occurs generally with the menstrual period, and I know from the history of the case that in the course of a week or ten days she will be a great deal better, I keep her quiet in bed, build her up, treat her on general principles, and in two or three weeks I operate upon her. I am called to another case that has been in bed (having had repeated attacks) for six weeks or two months. She has a temperature of 101°–102°.

What shall I do? Shall I wait? The woman is feeble and has a pulse of 120 or 130. Her physician has been trying to build her up for six or seven weeks while she has been suffering from septicemia. Can I build her up while pus is being absorbed? No. If the rectum is full, a cathartic should be given, to eliminate thus a little poison by acting on the bowels and kidneys. But I accomplish nothing by waiting two or three weeks. In fact, her septic condition is progressing day after day; the red corpuscles are being destroyed. Hence I operate immediately. Sometimes one of these patients will die on the table, or nearly so; but if I operate on ten of them, I know nine of them will get well. If I wait two or three weeks longer before operating, most of them will die. I therefore resort to immediate surgical interference.

Another class of cases is young girls who want to be athletes. They jump from a horse, from a carriage, or from a fence; dislocate an ovary, or the uterus is retroverted; the ovary is squeezed in its position and the circulation of the uterus is interfered with. Then come inflammation, edema of the submucous tissue, and excessive secretion of mucus, furnishing a fertile soil for the development of germs. In the course of two or three years we have salpingitis, and she may need an operation. She becomes neurotic, and after a while hysterical. If we paid more attention to young girls with these troubles, we would accomplish much more than we do at present. There ought not to be so much pseudo-modesty in connection with these cases. If there is any pain, they should be examined under an anesthetic; and if we can get the uterus or ovary in place, the girl will be a perfect woman in a short time, when the troubles alluded to will have been prevented.

As far as the prognosis is concerned, we sometimes promise too much in these cases, or the patients expect too much from us. If we operate on a hysterical woman, do you suppose she is not going to be neurotic after that? Certainly she is. You must not, therefore, promise too much in such a case.

Another point: we have many complications in our operations, extensive, firm adhesions, so that it is impossible to remove all the ovarian stroma and tubes. This particle of ovary which we are forced to leave continues to ovulate, and we have the resulting monthly symptoms for some time until the little ovarian tissue becomes exhausted. This results in the patient not being well after

an operation—certainly not for some years as a rule—and pelvic surgery gets in bad repute, because the patients are subjected to a serious operation and then do not get well, perhaps only improve slightly; hence, as I have said, we must not promise too much nor promise that all symptoms will disappear immediately. We should try to remove every particle of diseased tissue, especially every particle of the ovary; then, if we do this, the periodic monthly symptoms—excessive loss of blood and the monthly excitation of the nervous system—will cease at once. Hence, from the day of the operation, the monthly drain and shock to the nervous system cease and your patient improves immediately.

Certainly the patient has some of the symptoms due to the establishment of the menopause; some patients are troubled more that way, and others less, and these can be controlled by the administration of nerve tonics and nerve sedatives. The symptoms produced by the change of life month by month diminish, and in the course of a year have entirely disappeared; in very rare cases they last longer.

To sum up my rambling talk, I would say:

1. Let the general practitioner most conscientiously and carefully treat gonorrheal infection in women.

2. Let the family physician and obstetrician most carefully manage confinements aseptically, and in the treatment of miscarriages be most thorough and not trust the *vis medicatrix naturæ*, but carefully clean out the uterine cavity.

3. Girls or young women who have leucorrhea and pelvic pain, the result of accident or not, should be most carefully and early treated before mischief has been done.

4. In cases of acute inflammation judge each case by itself. If the symptoms are mild, palliative treatment with absolute rest will be proper, and an operation, if needed, can be performed later.

5. Cases of six or eight weeks' standing with sepsis should be operated on promptly.

6. When operating try to remove all diseased tissues, if you expect your patient to get well promptly and perfectly. If you cannot, and a second operation is necessary, tell your patient or the friends immediately, otherwise you will bring abdominal surgery into bad repute.

VIII. VARIOUS MODES OF TREATMENT.

By JOSEPH PRICE, M.D.,
PHILADELPHIA.

THE methods of treatment of pelvic disease may be broadly classed as those that are proven and those that are experimental. Proven methods have gained their position from the work of earnest, painstaking surgeons who, step by step, have arrived at conclusions which to them are as irrefutable as any of the laws of physics or mechanics, and from which they are not induced to vary save by the exigencies of a given situation, and then only to graft a new step or unusual procedure on account of some complexity which the case offers. In opposition to these we have the experimental surgeon, who seeks new laurels in the line of new microbes, and new ways of killing them after he has discovered them. After this death-dealing agent has been discovered, and with it some new chemical antidote, his next ambition is to invent some new automatic instrument by which all surgery becomes self-regulating. The abdominal wall is stitched up as if by a Wheeler & Wilson, and a new table fitted with a crank and a watch-tower, with red lights and electrical attachment, signals danger, but don't tell when to stop. In the midst of all this, what is to become of the minor steps condemned? and is the legitimacy of the simple removal of the appendages to be questioned? The advance guards of automatic surgery would have us leap the gulf and add to the original operation something to simplify it.

What refined irony and sophistic reasoning! Surely the refined metaphysics of the scholastics are not more disconcerting than this and not less rational. We must start out on the broad ground that simplicity of work must give us perfection of results, that the less we primarily deal with the less is the restoration to be made—assuming always that we deal ever with diseased structures and do all that is necessary for their removal or ultimate recovery. All

methods that do not thus aim at completeness must fall under the ban of criticism. Now, what is the rule with reference to disease anywhere of a suppurative character? The suppuration must either be encouraged to evacuate itself or assisted to an egress. As it is in the liver, the kidney, the brain, so it must be in the pelvis. Any method that loses sight of this principle must also fail in its ultimate efficiency. Herein is the failure of much, most, if not all of the so-called conservative methods so loudly heralded. Now, in all suppurative disease there is concurrent inflammation, and the part originally destroyed is glued down on some neighboring structure, interfering with its function or with its anatomical relation, causing pain or discomfort, greater or less.

It is argued by the conservative camp to take away just as little as possible, leaving adhesions if necessary to simplify the work. This, to the thorough surgeon, is not permissible. His aim is to remove disease, and to bring the parts not diseased into as near their normal anatomical relation as may be, and by so doing conduce more certainly to the ultimate well-being of the patient. Under this point of view the operation that would remove a diseased tube and leave an ovary bound down by adhesions to the pelvic wall or to the intestine or omentum is not surgery at all; it is only experimental dilly-dally, which, if it results well, is no credit to anyone.

The same may be said if the method is applied to the conservation of a useless tube because it is hard to remove. To know that in these cases women get well if we leave them when we have opened the abdomen to find them, puts our conservatism in the light of doing a useless operation, and becoming at once conservative because it is the easiest thing to do. To leave a tube full of pus or blood simply because it is hard to remove is like building a bridge until we get into deep water and then completing it with a ferry-boat. The so-called conservatism has no right at the present time to argue from the standpoint of the infancy of abdominal and pelvic surgery, any more than the fogy who stays at home would have a right to justify his fears of travel by citing the dangers of sail-boat travel as an argument against the ocean-liners of today. To say that many ovaries have been removed which ought to have been saved is to say what we all know—namely, that cures by operation have been sought when the idea was not justifiable, and we know that such errors were a part of the pioneer work, acci-

dentally, of the best men, designedly of the seekers after notoriety. But this does not answer the surgery of today; neither is it a fair accusation nor a plea. It is simply special pleading in the line of popularity. It is a fad which, like electricity, tickles the popular ear, the uncritical eye, and the easily satisfied imagination.

The surgery that leaves pus tubes and abscesses to get well of themselves, and afterward finds pregnancy occurring, is so fabulous, mythical, and mystical that I prefer simply to wonder without caring to understand or believe. If we are to have miracles and magicians with wonder-working tricks, let us swallow them whole, not try to digest, but lie stupid until they have worked their way through. What we have here referred to incidentally leads to a broader reference to pelvic pathology. To understand the limitations of conservatism, especially as applied to subsequent conception, it is necessary to consider the complexity of the pathological processes which militate against every chance of the organs regaining their physiological function. Pus tubes are not simple. It is the rule to find them with multiple constrictions, and with the tube simply a wire line, its lumen a wreck. The history of the changes leading to this condition of things is often of the utmost importance in diagnosis. The earlier inoperative period, when the post-mortem and clinical conditions were carefully noted, as in the researches of Bernutz and Goupil, have put us on the line of correct investigation and taught us what to look for, where to look, and how to distinguish necessarily operative conditions. Studies in intestinal surgery and in the general physiology and anatomy of the intestinal tract are necessary for the correct performance of this work, and the more general success of all sorts of abdominal operations at the present day is due secondarily to the wisdom of accrued experience and to the advances made in intestinal surgery, with which pelvic surgery has so much in common.

Many of the operations now successful were formerly failures because of the insufficient knowledge of how to deal with the wounded gut, how to make an anastomosis, or do a bowel resection. Hence it is to be put down as a postulate in pelvic surgery that no man has a right to attempt it who does not know how to deal with all the complexities of intestinal surgery. To know *when* and *when not* to stitch an intestine is as necessary as to know *when* and *when not* to operate.

Incomplete work here, as in all other divisions of the art, is fatal of good results. A fecal fistula is often the result of careless handling or of inexcusable carelessness in passing over a bowel lesion. That we may tear an intestine is no reason for leaving an adhesion which may afterward cause bowel obstruction, and it is an undisputed fact that many of the after bad results are due to carelessness in this respect alone. Now, the leaving of pus tubes to recover of themselves is just one step removed to stuffing them with gauze and trusting to Providence. To puncture and evacuate and stitch a suppurating cyst—say a real ovarian cyst—would be derided out of sight, and yet we have now a set of operators who do not hesitate to do this with the smaller pus tube, smiling as they do at their prudence, which is the better part of valor. I do not hesitate to say, and to say widely, that the men who descend to this sort of work are those who in their earlier history have been guilty of extreme rashness and now are hiding behind extreme so-called prudence. Take them one by one, look into their work, and you will find something in it that is frightening them now. All the so-called operations for room and light point to insufficient confidence to trust in a cultivated tactile sense. The removal of the sacrum for an ovariotomy or pelvic operation is no more justifiable or necessary than the resection of a rib for a simple pleurisy. Extreme resorts are in general the expedients of bad surgery which has lost its delicacy and seeks to take the disease by storm.

I cannot here refrain from paying my compliments to the Trendelenburg position from this point of view, and to say that I find it just as useless in all abdominal surgery as it is for the operation of suprapubic cystotomy, for which it was invented.

The various modes of treatment that have ever been suggested are scarcely to be noticed. They must stand or fall in their results. It is fair to assume that where great results have been claimed, where the means have been problematical, the disease has been slight or imaginary; and so where some mechanical procedure, such as the Tredelenburg position, is said to have simplified and rendered easy all the difficulties of pelvic surgery, I must allow others to believe it who find the need of it, and say, *Credat Judæus Apelles, non ego.* I put it down that the long incision and elevated position are not necessary, because with a minimum of incision and a real surgical care the conditions that demand them presumably do not

exist, and the advantages they offer are therefore mythical. I am willing to acknowledge that if a man has India-rubber or frozen fingers he can feel nothing, or that if he is blind and cannot feel he is not fitted for a surgeon, and I confess, moreover, that I am in no position to sympathize with such sufferers.

Just a word with reference to the assertion that with the Trendelenburg position there is no escape of fluid into the abdominal cavity. If there is a collection of any kind in the tube not overdistended, and the pavilion is attached to the ovary, it is an easy matter to enucleate the mass without rupture; but if the pavilion is attached deep down on the pelvic wall or to an intestine, what is to become of the discharging fluid? It is very easy to manufacture reasons that will not explain at all the actual condition of things. Any operator or set of operators who argue from a condition of affairs different from the above are taking a stand upon insufficient data. Akin to all these undemonstrated claims are the tentative methods in certain conditions, such as gauze packing and vaginal puncture for tubal abscess. Now, it is a demonstrated fact that gauze does not drain anything but mere fluid matter; the débris of any sort whatever remains behind, and in the cheesy conditions which obtain in pus collections it is a matter of entire impossibility to clean out the cavities by such packing. Then, again, the vaginal puncture is as uncertain as any procedure can be that does not go to the bottom of the disease. We do not know primarily the extent of the disease, nor its surroundings nor its complications, and therefore we cannot drain it certainly by any one given puncture or method, except by enucleation.

After the enucleation is made the general cavity can be drained and the results are in no wise questionable.

What are we to say as to the removal of the entire uterus in the presence of tubal and ovarian disease? I take it that if all the pathologists who have ever examined uterine structure which is purely muscular—or, to be more exact, in great part muscular—were to make a report, there would be a general consensus of opinion that an abscess condition of the uterine walls, apart from broken-down fibroid, is the rarest condition imaginable, except at the cornu in case of pyosalpinx.

Now, the disease here is strictly definable and removable. It is therefore an unproven assertion to assume that the uterus is

diseased and is the cause of the failure or cure in certain women whose appendages have been removed. To remove, therefore, an organ which in a great majority of cases is not even remotely diseased is a seeking after means to obviate bad results that should otherwise be explained. When men are on record as saying that it is impossible to remove tubes and ovaries without leaving some ovarian tissue, need we go very far astray in thinking that they must also leave diseased structure sufficient to cause trouble or that their methods are otherwise imperfect?

Again, the arguments for this ultra position all come from a source prone to mean bad results; and also it must be remembered that there is a difference to be noted in these cases from which they would assume their data. The disturbances due to fibroid tumors are removed at a rather late period, while those necessitating the removal of the appendages are of earlier origin. Hence it is nonsense to argue that the condition of the patients should be similar. If the trouble, nervous or otherwise, is no greater in a woman after operation than it would be at the menopause, are we justified in doing a hysterectomy on every woman whose tubes and ovaries are diseased? I think not. To argue that we need not do an entire hysterectomy, but may leave the cervix, is the weak answer of an uncertain position. The cervix, of all parts of the uterine structure, is most prone to malignant degeneration, and this fact alone might be the most sensible standpoint from which to argue the total ablation of the uterus in cases in which the operation would otherwise be indefensible.

In conclusion, we are to remember that enough has been done of all kinds of pelvic work to decide what is the general drift of results, how far they are satisfactory, and how far disappointing. The end here should justify the means, not in the hands of the disappointed experimentalist, but in the careful, painstaking surgeon, with a position and a faith of experience and care, who balances his accounts each day with himself, not seeking to escape the onus of a failure by a flight into unknown seas, but who gathers himself together, makes no mistakes twice, and evolves a system which is not of dreams but of reality, which bears a harvest of results which do not demand explanation and apology.

PERSONAL EXPERIENCE WITH PUS TUBES:

When to Operate; How to Operate; and the Results of Operation.

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In an address on "Surgery" delivered before the British Medical Association Greig Smith gave utterance to the following words: "The art of the surgeon has its best reward in blessing, not in fame. It has its punishments, too, for surgery is a terrible taskmaster. The punishment is a heartbreaking for the losing of a life by our own work. Our worst punishments are self-inflicted; for every failure, even if incurred in the leading of a forlorn hope, means a personal criticism of a cruelty and thoroughness which no outer criticism can match—a criticism that condemns without chance of condonement, for our own conscience is judge."

The surgeon is, like the actor, set for a part either in the comedy or tragedy of life. Some seem set in tragedy so frequently that they should give up surgery and try medicine. Others seem eternally set for comedy without any intermixture of the tragedy. These men conceal the truth and mislead their audiences.

There is a terrible disease that invades womankind and that fills green graveyard plots year after year; that darkens the threshold of many a happy home—a disease that kills as surely as a slowly-developing phthisis, but a disease that, unlike phthisis, is amenable to treatment. This is a disease that has existed since the dark ages. For a time it was not recognized in its various phases, but all were classed under one head and considered to be an inflammation of the cellular tissue filling the pelvis. When abscess formed and pus burrowed in various directions the disease was looked upon as pelvic abscess. Such things as intratubal abscess, as intra-ovarian abscess, as intraligamentous abscess, and as extraperitoneal

abscess were not differentiated, and yet they doubtless all existed. After a time, when the hot-water douche and the glycerin tampon were found inadequate to cure these invalided women, other steps were instituted, and the boldness of a few abdominal surgeons proved, to their own satisfaction at least, that nothing but surgical measures could cure the disease, however much other measures might palliate its course and alleviate the sufferings of the patient. It was found that women who had been for years bed-ridden, after the removal of tubes and ovaries filled with pus were restored to perfect health. That they were to a certain extent unsexed cannot be denied. Had their organs been healthy they would not have been removed, but in their diseased condition it was the lesser of two evils that the surgeon choose. These operations were seen by many of the younger men, the technique was learned, and after they returned to their homes the *tactus eruditus* was gradually acquired. Those who had made a pilgrimage to Mecca found that their *confrères* at home had absorbed a certain amount of the truth, but in their inability to diagnosticate the cases accurately, and in their enthusiasm to relieve suffering women, they had gone too far—the pendulum had swung again beyond the middle line. This was a misfortune. Hundreds of women were uselessly spayed throughout this continent, and not only this continent but in Europe.

The surgeons then began to look about them for a new *rôle*, and a *rôle* that was likely to prove popular—for the surgeon, like the actor, is to a certain extent dependent on popularity. When the antiseptic method first prevailed the surgeon who held aloof from its precepts might as well have ceased to practise. The antiseptic methods were in popular favor, and the man who did not employ them in their entirety was in disfavor with the public. So, again, with this so-called castration of women. The public failed to see the difference between a slightly adherent ovary and a normal tube; or between a pus-filled ovary and a pus-filled tube.

The operations such as those I am about to set before you are a dreadful tax upon the nervous system of the operator. They are, without exception, the most terrible of all surgical operations. I have seen a great deal of surgery in my short career, but have never seen any operations to compare with operations for the removal of pus tubes and ovaries from delicate women. I do not now refer to tubes and ovaries slightly adherent and better left

where the Creator put them. I refer to cases in which the operator is wallowing in pus, where enormous abscesses of tubes and ovaries that have perforated into the bowel and into the bladder have to be peeled out from among dense adhesions of such delicate structures as the intestines—cases in which the operator is compelled to leave well enough alone, cease work after the removal of one side, wash out and close the abdomen, and go back after the other side on some subsequent occasion. Naturally a time arrives in an operator's existence when he does not care to sustain such a terrible strain. If he has a large hospital dependent on him, it is only natural that he should suddenly become conservative—that is what they call it, conservatism. He goes back to his old routine treatment, in which there is no anxiety and considerable money—the hot-water douche, the vaginal tampon—and he will neither operate himself, nor let others operate if he can help it. I believe there is a time when a man should not operate on such cases, but he has no right to prevent others from doing what they know and he knows is best for the patient—namely, the enucleation of such pus sacs.

In this Association we have many who have punctured these abscesses and who have failed to cure them; we have many in this Association who have by this means cured a few cases; but I trust we have few in this Association who are unable to discriminate between the different forms of pelvic abscesses.

In my own experience I have met with four different varieties—namely, intratubal abscess, intra-ovarian abscess, intraligamentous abscess, and extraperitoneal abscess (that is, an abscess entirely outside the tissues forming the pelvic contents). The latter variety may be cured by puncture and drainage. The third variety, or intraligamentous abscess, must be opened and drained, but if accompanied by a pus tube that is not removed the abscess may remain uncured until the pus tube is removed. The second variety will occasionally cure itself by perforating downward and discharging its contents, but the patient will not remain well while the contracted and disorganized ovary is left *in situ*. The intratubal abscess should always be treated by removal of the tube. We have all been frequently amazed to find such large collections of pus in women who are not emaciated, but who are suffering from intermittent attacks of pain. It seems incredible that a woman can move around and do her work, and that she may be well nourished

with perhaps an inch or two of fat covering her abdomen, and yet that she has in her pelvis perhaps a pint of pus.

I am quite prepared to admit that when a small cyst of one of the tubules of Kobelt is found it is unnecessary to remove both ovaries and tubes; that when a small cyst of one ovary is found it is quite unnecessary to remove the tube and to remove the other ovary and tube. I am quite prepared to admit that because a woman may have had at some previous time an attack of inflammation, that fact does not justify nor warrant a removal of slightly adherent ovaries and tubes. Many a woman who has been so afflicted has completely recovered in the course of a few years. No pus has formed and the adhesions have to a great extent disappeared. Even with the adhesions she may remain in a good state of health, and may even bear children. I have observed such women during the whole course of pregnancy until its happy termination in a safe delivery. They have a tendency to miscarry, they suffer a great many dragging pains while the adhesions are stretching, but they are not particularly inconvenienced by their condition.

We must now discuss the question, When should we operate? In the rather lengthy table appended to this article I have classified carefully, from minute records, a list of seventy-three cases of abscess of the tube or tubes and abscess of the ovary or ovaries, or a combination of both. I have not recorded cases of hydrosalpinx or of cyst of the ovary. As I do not remove ovaries or tubes unless grossly diseased, I have no cases of such to record. The names of the physicians referring the cases are given, and many of my professional friends will be able to recognize their own cases.

In the series of seventy-three cases there were thirteen deaths; of these, four were cases done, in a series of ten, in a small general hospital unsuited for the performance of abdominal operations until after the completion of the new surgical wing. Of these four, three died and one recovered. Whether these cases would have resulted differently if done with better surroundings it is impossible for me to state. But I firmly believe that the results would have been better with different environment. I have recently had a run in one institution of thirty-five cases without a death, but the thirty-sixth case, one of ruptured pus tube with

acute general peritonitis, died. These cases included two cholecystotomies, three hysterectomies, one myomotomy, two oöphorectomies for fibroid, one abscess of ovary, one suppurating ovarian cyst, three papillomatous tumors of the ovary, four simple ovarian cysts, six cases of pus tube, one case of appendicitis, and one of pelvic abscess. I simply mention this fact to show that my work has been quite satisfactory to myself. An operator ought to remove one hundred pairs of slightly adherent ovaries and tubes with 100 per cent. recovery; but I do not wish you to misunderstand me—I am not discussing such cases in this paper. These cases reported were desperate ones, and thirteen deaths out of seventy-three cases, when the records of the cases are looked into carefully, will be found to be a very low mortality.

In looking back over my records I find that the fatal cases were chiefly those in whom gonorrhea had been contracted but a short time before. I now believe that it is not wise to operate on these cases too soon after the primary infection. It is better to wait until the pus has become to a certain extent sterile, and until the poisonous germ has become attenuated. The first case that died was one on whom I performed my second abdominal operation, and, not knowing the best method of procedure, I unfortunately tore one ureter, and finally closed the abdomen without being able to complete the operation. After more mature experience, and after having made a pilgrimage to the old country, such a case would now be readily completed. The second case that died had had gonorrhea but a few months before. The third case that died was operated on over a butcher-shop in the country, in the middle of summer, with the flies thick about the place and stagnant water in the yard. The fourth case that died was very septic at the time of operation, had suffered from high fever for five weeks, and the abdominal cavity was studded with tubercular deposit. It would have been wiser in this case to have closed the abdomen and to have done nothing. The next case that died was saturated with sepsis at the time of operation, and was operated on after nine weeks of high temperature; the operation was done as a last resource. The next three cases that died were operated on after a recent infection with gonorrhea; two of them were prostitutes. The next case that died had been operated on previously, and one enormous pus tube had been removed; but owing to her weak con-

dition I was forced to desist and operate a second time. She died after the second operation, performed nine or ten weeks after the first. The gonorrheal infection in this case was remote—that is, occurred two years before operation. The next fatality occurred in the case of a young woman, a prostitute, recently infected with gonorrhea. The next death occurred in a woman who was in the last stages of septicemia and very much emaciated from her long-continued illness. In the next fatal case the death was attributable to an accident. A piece of omentum escaped through the opening from which the glass drainage-tube had been removed, and remained out beneath the dressings all night. The patient's vomiting was attributed to the anesthetic, and I was amazed in the morning, on removing the dressings, to find the extruded mass black and gangrenous. Peritonitis set in, and the patient died on the ninth day. The next death occurred as a result of rupture of the intestine and escape of fecal matter at some time after the operation. The outer coating of the intestine had evidently been injured during the enucleation of an enormous abscess of the left ovary, and a perforation occurred subsequently. She died on the second day.

The remaining sixty cases recovered. Some of them made an easy convalescence, others only recovered after a desperate illness. In the whole range of surgery we have no successes that can be more satisfactory than these. I think I could show you these sixty women today in perfect health. Some of them have been lost sight of, but many of them are heard from at intervals.

The history of these cases previous to operation would fill an enormous volume. There would be in the volume many tales of woe. There would not be much in the volume that would be flattering to the so-called "treatment" received by these patients before surgical measures were resorted to. One woman has begun to live her life over again. She was for fourteen years bedridden; she grew old as the town grew up about her; she grew gray as a succeeding generation was born. Her husband lost his lightness of step, together with a farm and a good many cattle, from his indulgence in the so-called "treatment." The woman was not expected to recover from the operation, and arrangements were made with her brother-in-law, an undertaker, for the removal of the corpse from the hospital. These arrangements were completed

before the operation was undertaken—rather a cheering prospect! I went to work with fear and trembling. The operation was very difficult, but, contrary to the expectations of all, she never had a bad symptom after its completion. She is at present enjoying life and in perfect health. Many of the other cases had been through other hands and had been under the care of various physicians, until at last they reached the care of one of the more enlightened young men of the rising generation, and were transferred to me for surgical interference.

We must conclude, then, that there is danger in operating on these cases at too early a period after the primary infection, and there is certainly a want of wisdom in deferring operation beyond a certain point. No case should be operated on during the first acute attack, except under very exceptional circumstances. They will frequently linger for weeks with high fever, the fever will then to a great extent disappear, and the general health will improve up to a certain point. Operations done at this time will be attended with a much lower mortality.

In obtaining the history of many of these cases I find that they have had an attack of inflammation of the bowels following either labor, miscarriage, gonorrhea, an intra-uterine application or instrumentation, or some severe injury. Following this inflammation they have had what has been called low fever or typhoid fever. This fever has continued for some weeks; they have then apparently convalesced, but have never regained their strength. But, a few cases never lose this fever, and must be operated on to save their lives. The majority, however, convalesce, as I have said, to a limited extent, but suffer from relapses. These relapses come on at varying intervals. In each attack there are pain, tenderness, rise of temperature, and in some of them vomiting. A large number of women suffer from inflammation of the bowels and convalesce readily and completely. It is a fortunate thing for the human race that this is so. These seventy-three cases must be looked upon as exceptions to the general rule; and the exceptions are the cases for whom our skill is required, because the other cases recover so perfectly that no treatment is needed.

In giving the cause I have done so only after careful inquiry. In five of the cases the cause was not known. In thirty-six cases the cause was gonorrheal infection. In some of these cases this

was not ascertained until after the operation had been performed, and the information frequently reached me in a roundabout way, oftentimes through some professional brother who had attended the husband during the attack. A husband suffering from gonorrhea rarely consults the family physician. The family physician may, therefore, be in constant attendance upon the suffering wife, and may be entirely in the dark as to the cause of her illness. An admission from the husband is fraught with so much danger to the subsequent happiness of his home that he will, in nine cases out of ten, deny the presence of an urethral discharge.

In three cases the disease was produced by tubercular deposit; in one case from peritonitis due to the presence of a uterine fibroid; in one from peritonitis following a fall from a carriage; in one case from inflammation following an intra-uterine application; in one from the passage of a sound into a uterus that was supposed to contain an ovum impregnated about two weeks before. Some of the cases suffered from metrorrhagia, so that they closely simulated cases of fibroid tumor; many of them suffered from menorrhagia; and a large majority suffered from dysmenorrhea. The length of time the disease was progressing varied from a few months up to fourteen years. Many cases were mistaken for pelvic hematocele or fibroid tumor, and many of them were looked upon as cases of pelvic cellulitis.

After looking back on my first operation for the enucleation of pus tubes, and after having done a fair number of abdominal operations for the removal of ovarian tumors, fibroid tumors, for the removal of the vermiform appendix, etc., I am firmly convinced that none but those who have had the advantage of a special training in this department of surgery should undertake the operations for the relief of cases such as those under discussion. My first case was not completed, the ureter was torn, and the patient died.

Outside of the preparations that should be made for every abdominal operation, there is a certain method of procedure that should be followed in each of these cases. In the first place, it is necessary to draw up the anchored omentum, and to do so rapidly. The portion from which an anchored omentum has been peeled will not bleed, but the proximal portion of the omentum itself will bleed freely, and this bleeding should be carefully attended to. If, after it has been placed temporarily to one side, wrapped in a sponge,

while the rest of the operation is being carried out, it is found that it still bleeds, no time should be lost, but fine ligatures should be applied around the bleeding portion, and the rest should be cut away beyond the ligatures. The omentum should never be tied with coarse silk; the very finest silk should be used for this purpose. I frequently tie off a shred of the omentum to prevent intestinal obstruction by the constriction that may be produced by the tags that are left after the anchored portions have been detached from the parts to which they are adherent. The enucleation should always be begun at the uterine cornu. The uterus should first be found before any peeling is commenced; after this has been located the operator has a valuable landmark. The line of cleavage between intestine and tube can only be made out by the tips of the index and middle fingers, and this line of cleavage must be made out in the dark recesses of the pelvis. The peeling must always be made from the centre outward and forward up against the posterior layer of the broad ligament. The operator who begins his enucleation at the infundibulo-pelvic ligament, or from the front of the broad ligament, will soon find that he has made a terrible mistake; large veins will be opened, and the hemorrhage will be severe, the cellular tissue will be invaded and damage will be done to important parts. I find I receive a great deal of assistance from a small laryngoscopic mirror fitted with a mouthpiece, as used by Tait, that it may be held between the teeth. With the aid of sponges to hold back the constantly prolapsing intestine, the operator may view from time to time the field of operation, and may thus frequently avoid injury to a portion of adherent intestine. The hemorrhage can usually be controlled, if the operation is done with the precautions above mentioned, by sponge pressure. But if the broad ligament and cellular tissue of the pelvis have been invaded, sponge pressure will not be sufficient to control the hemorrhage. In a recent case I injured a small branch of the internal iliac vein. This was readily discovered by means of the mirror and the bleeding points tied. It is much better not to attempt to remove a tube or ovary, filled with pus, intact, if such removal is fraught with danger to any portion of adherent intestine. At times it will be found by the aid of the mirror that the outer coat of the intestine has been injured, and when this is so I believe it wise to draw the serous coat together with a few Halsted sutures.

Drainage and flushing. In the list of cases it will be found that drainage was used in sixty-one cases, and thirty-nine cases were flushed. In the cases that died two were not flushed, while eleven were flushed thoroughly. All the fatal cases were drained. I am firmly convinced that a prolonged drainage is the correct procedure in such cases. Among my earlier cases I used prolonged drainage. In the intervening period, when there was such an outcry against drainage, I attempted to shorten the length of time that the drainage-tube was left in, and I found that the case did not do so well. A secondary rise of temperature took place, some inflammatory action set in at the bottom of the sinus from which the drainage-tube had been removed, and this delayed convalescence. In my later days I have returned again to prolonged drainage, and intend to pursue that course in future. The method I adopt is about as follows: the drainage-tube is inserted and left *in situ* for about six days, being drained at intervals and packed with iodoform gauze after about the second day. I never use iodoform-gauze packing until all danger of secondary hemorrhage is over. On one occasion I packed the tube, and on removing it a couple of ounces of blood were drawn up from the pelvis by means of the sucker, and yet this hemorrhage did not show through the gauze. Had there been no gauze it would have been readily discovered.

About the sixth day the rubber drainage-tube is passed down through the glass one (to act as a guide when the glass one is reintroduced), and the glass one removed, thoroughly washed, and replaced for a day or two longer. I find that by doing this I can more readily keep it aseptic. At the end of the eighth day a rubber drainage-tube is placed in the sinus and the glass tube removed. The rubber tube is kept packed with iodoform gauze, removed and replaced two or three times a day, and shortened daily. In this way a sinus is kept open down to the seat of operation, and if any débris, left behind during the peeling off of friable and poisonous tubes, should become a focus of suppuration, the pus will find the readiest exit through the old drainage-tube sinus. If the abdominal wall is completely closed over and firmly healed together, any such pus can only find an outlet by burrowing downward, and a sinus may thus be left that cannot readily be closed. With care a drainage-tube can be kept so aseptic as to become filled with lymph, and I believe it would almost grow inside of the abdomen without pro-

ducing much trouble. The danger of the infection of the peritoneum through the drainage-tube track is a myth. After a very few hours adhesions form of intestine to intestine around the tube and prevent any such infection. Instead of allowing poisons to enter the abdomen the drainage-tube is an aid to their removal. The flow that it creates from the system and from the peritoneum toward the outer world must tend to wash out germs instead of allowing of their entrance. We all know that the flow established through the intestine, if acted upon until purgation is produced, will relieve intra-abdominal dropsy; and a drainage-tube properly placed in the abdomen acts as a constant flusher, for some hours or days, of the peritoneum.

Hernia is certainly more liable to occur as a consequence of drainage, but such a hernia is only a slight matter when compared with the life of the patient. It may be practicable, in some institutions where there are numbers of assistants, and assistants trained in bacteriological research, to examine the pus from a pus tube or suppurating ovary with the microscope at the time of the operation, but such examination is certainly not practicable in my work. I therefore think it is best to adopt drainage in all doubtful cases. What there is in drainage that is so terrible that it should call down upon it the fierce criticisms of many abdominal surgeons I have failed to discover. I also must decline to admit that drainage of the abdominal cavity is an unsurgical procedure, and must further state that when débris, composed of lowly organized material, is left behind, as it must be left behind after many of these operations, I consider that it is unsurgical not to drain.

Flushing, to be of any service, must be thorough, and a large quantity of water should be used. It will be found to produce an alteration in the pulse as soon as it is begun, but after it has been continued for a few moments the pulse again slows down. The pulse is at first raised by the application of the hot water to the peritoneal cavity, and the respiration is increased in frequency. Such a stream of water should be used as will float out clots and pieces of débris, as well as remove pus. The flushing that I occasionally see performed by means of a little Davidson's syringe nozzle is but an apology for thoroughness.

It is advisable during operation to ascertain the exact condition present by going slowly. If the operator is uncertain, he should

pack the intestines back with sponges, and proceed step by step until he is convinced regarding the condition with which he is dealing. I have seen an operator remove a large portion of the rectum; it was peeled out from among adhesions and tied off. Such a mistake, it seems to me, can only occur as a consequence of too great haste. Sometimes the pus in a tube will burrow in the broad ligament and communicate with it, thus forming an abscess in the tube and an abscess in the broad ligament. It would, of course, be a very serious matter for an operator to attempt to enucleate more than the tube in such a case. Any such attempt would carry him into the folds of the cellular tissue among important structures.

On one or two occasions I have been restricted by the husband of the patient. Such restrictions as to what one may do after opening the abdomen should not be placed upon a surgeon. Occasionally, however, they cannot be avoided. If an operation is likely to very desperate, the husband may only permit the operator to advance far enough to view the difficulties of the case, and may insist that if the operation is likely to be particularly desperate it shall be proceeded with no further. I have operated on two occasions under such circumstances. One of the patients afterward went to another city, and was eventually forced to submit to another operation, and whether she succumbed or recovered I have failed to find out.

The ligation of the pedicle is a matter of very great importance. In his anxiety to remove all diseased tissues the operator scoops the inside of the tube with his scissors, and in doing so is very liable to diminish the bulk of the tissue beyond the ligature, and in this way the ligature may become loosened. I have seen a pedicle bleed as a consequence of this procedure, but the bleeding was fortunately noticed before the abdomen was closed, and a second ligature applied. The tissue of a pus tube, like the tissue of a fibroid tumor, has a tendency to shrink; the ligatures should, therefore, be applied very tightly. I have been forced on one or two occasions to ligate a portion of thickly adherent tissue in the neighborhood of the infundibulo-pelvic ligament, owing to the fact that the mass was densely adherent to the rectum. During the process of peeling one is very liable to produce a tearing at the outer end of the tube in the edge of the infundibulo-pelvic ligament, and, as this torn portion is beyond the seat of ligature, it is liable to bleed. I was forced

on one occasion to reopen a case for hemorrhage from this source, but fortunately she made a good recovery. In her case a small artery in the infundibular ligament was found spurting, and a pair of pressure forceps applied; this controlled the loss, and the part looked dry when they were taken off. But as reaction came on and the heart's beats became firm, the plug was forced out and the vessels began to spurt again. On opening the abdomen I found a little twig pumping away slowly but surely, and closed it by means of a fine ligature.

To test the amount of hemorrhage a drainage-tube should be inserted during the interval of time that is occupied by passing the sutures. The amount of oozing can thus be judged, and if excessive the bleeding points should be brought into view by means of the mirror and sponge. Sometimes a large vein will be found torn, and the blood will be found running from it very freely. On such a point a small ligature should be placed; this can be done without difficulty, and the operator will feel much more comfortable for the rest of the day. In some cases, however, a continual oozing may keep up, and the patient may lose a large quantity of blood. I have recorded one such case (XLII.). We gave up all hope in this case. Her sister died from continuous oozing after confinement, and the patient herself was one of a family of bleeders. In this case I retied the pedicle before closing the abdomen, to make sure that there was no leakage from that source. She was placed in Trendelenburg's posture, and with a mirror the bleeding was found to be simply oozing; the blood oozed from hundreds of points. I tried sponge-packing and hot water, but failed to check the hemorrhage. It was three hours before I closed the abdomen. The patient had at that time a pulse of 150. I was at a loss to know what else to do. I applied a solution of perchloride of iron, I injected perchloride of iron through the drainage-tube after the abdomen was closed, but still the oozing continued. For several days and nights we expected that each would be the last. Her husband was told that there was no hope. When it seemed as if there was no more blood to ooze out the oozing ceased and she made a slow but satisfactory recovery.

In Case XLIII. the patient was so collapsed by the severity of the operation and her poor health that it was necessary to resort to artificial respiration to keep her alive. This was kept up for some

time; arms and legs were bandaged, stimulants administered hypodermatically, until she began to breathe voluntarily. She was then placed in bed, and made a good recovery. When she left the table her pulse was, as near as we could count it, made out to be 180.

Another difficulty to be met with sometimes is prolonged hemorrhage from enucleation of a large mass such as that in Case XXXIII., where the hemorrhage was terrific. I worked as rapidly as possible and used as much sponge-pressure as possible during the operation, endeavoring all the while to reach the pedicle. Owing to dense adhesions around, it was impossible to reach this until the very last. It was feared in the interval that the patient would die on the table before the hemorrhage could be checked. The abscess of the ovary ruptured and flooded the abdomen with pus, and this complicated matters. The omentum was nearly as thick as the palm of a lady's hand and firmly adherent to the enormous abscess of the right ovary. The patient was so low that those standing by could not feel the pulse, and I was advised more than once to close the abdomen, with strapping, so that she would not die on the table. Arms and legs were bandaged during the operation to keep enough blood in the head to nourish the brain. As soon as the pedicle was reached and the loss of blood controlled, the completion of the operation did not apparently increase the gravity of her condition. We felt that it was not wise to remove her from the operating-room, and she was left there until the next day. The priest was in attendance as soon as she was placed in bed, having been sent for before the operation was completed, that he might administer the last rites of the Church, according to her desire. To those who have not done these operations such statements may appear incredulous, but there are many of my friends ready to verify them.

Case XXXV. was operated on during an acute attack of peritonitis produced by escape of pus from a pus tube. The pulse was 160 when she was placed on the table, and nobody expected her to recover. She made a somewhat prolonged convalescence. In this case the drainage-tube was used, and removed on the fourth day.

There is a class of cases in which nothing can be reached except one dense plane of matted tissue covering over the inlet to the pelvis. In such cases it would be necessary to remove bladder

and rectum in the attempt to remove tubes and ovaries. I have operated on two or three such cases, have endeavored through a prolonged period to get some opening into the adhesions, and have been forced to close them up without removing anything. One such case is No. XXVI. She had been ill a long time. I peeled off thickened, cartilaginous-looking omentum and removed it, but even then it was impossible to distinguish between intestines, tubes, and ovaries. After working for considerable time the pulse began to rise until it reached 120, and I came to the conclusion that my only course was to desist. The patient has been under my observation ever since. She has been ill off and on, suffering from distention and vomiting, together with symptoms of obstruction of the bowels. After the attacks of inflammation she passed bloody urine. I presume the absorption of the ptomaines from the inflamed peritoneum produced in some way a congested condition of the kidneys. In the interval no blood, casts, or albumin were to be found. It is now two and one-half years since the operation; the patient is able to go around and do light work, but I am afraid is a confirmed morphine-eater. I remember, some years ago, watching a similar case through the Home for Incurables and into the post-mortem room. Even after death, in the post-mortem room it was impossible to remove anything without removing bladder and rectum and connective tissue as well. That patient died from intestinal obstruction produced by the pelvic matting. I have noticed in many of these cases the unusual color of the fat lining the abdominal cavity; it is of a deep yellow color and looks like the fat of a dead chicken. In several cases I have found small cysts of the peritoneum. In a former paper I gave my views regarding the formation of these cysts. They are not so infrequent as we might suppose. Frequently there is a large cyst, filled evidently with fluid that has collected during some attack of inflammation. After a serious peritonitis this fluid has been left between the intestines, absorption has not taken place, and the cyst has resulted. Other similar collections between other folds of the intestine had temporarily united by adhesive inflammation. By the vermicular action of the bowels these eventually become detached and pendulous, and hang like grapes from some portion of the peritoneum. I have tapped them and left the sac behind without perceiving any difference to the patient. I have removed them by fine ligature, owing to the

fact that the grape-like cysts have a tendency to bleed if cut off without having been previously ligated. After the pus tubes have been removed the previous existence of this condition has no influence whatever on the convalescence.

In these operations the sponges should be very carefully counted. This should of course be done before any abdominal operation, but should be carefully done in such cases as these, because during hemorrhage sponges are frequently being put into the pelvis to control the bleeding while the rest of the enucleation is proceeded with. In this way a sponge becomes coated with pus and blood, and after the fingers have been peeling off adhesions for some time their sensitiveness is to a certain extent lost, and such a sponge is very apt to be overlooked. In two cases I have had a very serious hunt for a lost sponge, and had there been any doubt in my mind as to the fact that there was one sponge missing I should certainly have closed the abdomen and left it there. In one case my fingers had passed over the sodden, pus-laden sponge several times before it was finally detected by the fingers of my assistant; his fingers were not sodden with the prolonged contact with moisture, and were therefore more sensitive.

If fecal fistulæ occur and feces are passed through the drainage-tube, the patients should be let alone; the less they are interfered with the better will be the result. Adhesions will form, and though feces be passed out through the drainage-tube the patient will frequently recover. These fistulæ are not the result of the presence of the drainage-tube, but are due to injury of the outer wall of the intestine. When a very firmly adherent rectum has been peeled from pus-tubes it is unwise to give rectal enemata early after operation. One patient, I think, died as a consequence of an enema finding its way, through a perforation in the rectum, into the abdomen. In another case the nurse was giving an enema, and was amazed and frightened to see the fluid coming out through the drainage-tube; the patient, however, made an excellent recovery. These fecal fistulæ have a tendency to heal, or they may be operated on at a subsequent date and closed. There is a peculiar bile-colored stain to the fluid drained from the peritoneal cavity that is met with occasionally. I am unable to state the precise cause of this staining. The fluid does not give the biliary reaction. In wo or three cases in which I have seen this deep yellow tinge the

patients have died; in one case it was accompanied by intense jaundice.

Results of Operation. In the tables I have inserted the results of the operations in those cases in which I have been able to obtain recent information. I have already said that there are no cases in surgery that will give the operator more satisfaction than these. In some cases the menstrual flow ceases. There is usually a slight flow, coming on a few days after operation. In some cases this may return no more. I have one patient who has been menstruating regularly ever since her operation, nearly four years ago. I was at a loss to know why this was until I looked up my record and found that both tubes were removed, but that one ovary could not be found, owing to the fact that the tube on that side had burst into the broad ligament and produced an abscess of the broad ligament that was drained. This proved conclusively to my mind that the removal of the tubes did not have much influence on the functions of menstruation. The patients pass through the usual symptoms of the menopause, with flushings, vertical headaches, and nervous symptoms. Those who have become emaciated by the long-continued suppuration rapidly put on flesh. When dyspareunia has existed before operation it disappears after convalescence, and the patient is much less unsexed in this respect than she was before. The patient who before operation has been living in her bedroom is now enabled to live in the outer air, and is transferred from the invalid carriage to her own feet; the doctor is not now so frequently a visitor to the house as in former years, and happiness is restored to the home. In many cases we can append what I have appended to Case No. LXVII.: "Patient the marvel of the town, walking all over after being bedridden for fourteen years."

No.	Name and age.	Married or single	Doctor.	Cause.	Length of time progressing	Reasons for operation.	Remarks regarding operation.	Flushing.	Drainage.	Result.	Subsequent course.
1	Miss D. 27	S.	Jas Ross, Sr.	Not ascertained.	About 3 years.	Incapacitated for work; mass felt on each side of uterus.	Mass felt on each side of uterus. Two large pus tubes; operation very difficult; ureter torn; one tube could not be removed.	No	Yes.	Death in 30 hours.	
2	Mrs. G. 32	M.	Holmes	Not known.	5 mos.	Incapacitated for work; mass to side of and behind uterus; larger on right side. Fluctuation.	Pus tubes; one communicated with abscess in broad ligament.	Yes	Yes; tube removed 3d day; replaced by rubber one.	Recovery.	Slight peritonitis
3	Mrs. J. 26	M.	Parry	Miscarriage	Several months.	Mass on right side; uterus enlarged.	Terrible adhesions. Large pus tube on left side. Ovaries not enlarged.	Yes	Yes; tube removed about 4th day, replaced by rubber one	Recovery.	Slight peritonitis
4	Mrs. A.	M.	J. F. W. Ross	Probably gonorrhea.	About 7 or 8 months.	Suffering much pain; flooding. Operated on 3 years before for ruptured ectopic gestation; one child since. Evidences of pus tube on other side.	....	No	Yes; tube in 22 hrs.	Recovery.	
5	Mrs. B. 22	M.	Davison	Thrown from carriage.	About 1 year.	Recurring attacks; matting of pelvic organs; mass on right side; peritonitis.	Dense adhesions. Cecum firmly adherent to right tube; end of tube adherent to rectum. Right ovary and tube could not be removed at this sitting owing to signs of collapse.	Yes	Yes; tube in over 8 days.	Recovery.	Complete recovery: saw patient two years after. Evidently quite well.
6	Mrs. P. 32	M.	Stalker	Tubercle.	2 years.	Emaciated and septic-looking; double pus tubes felt.	Visceral and parietal peritoneum studded with tubercle. Did not remove tubes, as thought useless.	No	Not drained.	Recovery.	Tubercular disease of bladder developed and lungs became affected. Lived a year or so.
7	Mrs. Mc. 25	M.	J. H. Richardson	Probably gonorrhea.	3 mos.	Fever; flowing; pain; peritonitis; pelvic matting; anesthetic required for examination; double pus tubes.	Found cystic mass imbedded in left broad ligament; it burst. Peeled out enlarged tube. Hematoma of ovary had burst into folds of broad ligament. Right tube and ovary peeled out.	Yes	Yes; tube in 4 days.	Recovery.	

8	Mrs. H. 29	M.	Seen several	Peritonitis (said to be from cold). Probably gonorrhea.	6 years.	Very ill many times with peritonitis; leg drawn up on right side; cannot straighten it; supposed to be hysteria. Uterus large; mass on left side; fluctuation. Right side, cyst of ovary. Anesthetic.	Cyst of each ovary size of small orange. One a hematoma.	No	Yes.	Recovery.	Able to straighten leg after operation.
9	Mrs. C. 25	M.	Wallace	Miscarriage	1 year.	Cyst on left side; pelvic matting.	Cyst, size of small orange, left side. Right ovary imbedded; removed. Tubes adherent.	No	Yes; tube removed after 3 days.	Recovery.	
10	Jennie R. 20	S.	Allen Baines	Gonorrhea.	3 mos.	Severe pain; enlargement on right side of pelvis; no fluctuation.	Right pyosalpinx. Cheesy, thickened tube. Matting felt on other side found to be adherent bowel about left ovary and tube. Left ovary and tube not enlarged, not removed.	Yes	Yes; tube removed 6th day.	Recovery.	Abscess of left ovary afterward formed, and was removed 9 mos. later. See below.
11	Mrs. McD. 44	M.	Meek	Peritonitis accompanying fibroid.	18 mos.	Uterus much enlarged and hard, retroflexed and bound down; mass on each side; pelvic matting.	Patient operated on a year before, but nothing could be done. Uterus found large, retroverted, and diseased; ovaries and tubes matted together (letter from operator). Found fibroid, firmly fixed ovaries and tubes. Intestines all matted together. Risk too great, so did not remove.	No	Not drained.	Recovery.	Saw patient three years after in perfect health. Came to see me, as I had advised Home for Incurables for her.
12	Mary C. 28	S. had 1 child.	Carveth	Puerperal peritonitis.	3 years; infect'n with gonor. 3 mos. ago.	Mass on each side of uterus.	Cyst right ovary bound down. Left ovary and tube adherent.	Yes	Yes; tube in 18 hrs.	Recovery.	
13	S. McL 17	S.	Garret	Gonorrhea; prostitute.	1 year.	Many attacks of peritonitis; mass cul-de-sac; pelvic matting.	Part of rolled omentum removed. Tubes and ovaries bound down. Terrible adhesions; could not remove.	No	Yes; tube removed in 22 hrs.	Recovery.	Patient returned every few mos.; pain, etc. In bed a short time; then better. Still living a fast life. Gone to Buffalo.
14	Gussie W. 17	S.	Noble	Gonorrhea.	9 mos.	Mass taken for uterine fibroid; treated electrically; no improvement; decided to remove ovaries and tubes.	Found mass on left side. Removed right pus tube and ovary. Thought mass fibroid. Found at last pus tube, enormously thick wall. Tube removed.	No	Yes; tube in 48 hrs.	Recovery.	Since married and perfectly happy.

No.	Name and age.	Married or single	Doctor.	Cause.	Length of time progressing	Reasons for operation.	Remarks regarding operation.	Flushing.	Drainage.	Result.	Subsequent course.
15	Mrs. C. 33	M.	J. F. W. Ross	Puerperal peritonitis.	5 years.	Cystic mass left side; dilated tube on right.	Pus tubes. Cyst of right ovary. Left ovary adherent and cystic.	No	Yes; tube removed after nearly 3 days.	Recovery.	Slight secondary hemorrhage; reopened in 5 hrs. 1 qt. of blood in periton'l cavity.
16	Mrs. McD. 29	M.	J. F. W. Ross	Gonorrhea; married 9 weeks.	9 weeks	Pelvic matting. Indefinite.	Pelvic organs matted: intestines, ovaries.	No	Yes; tube removed about 7th day, replaced by rub. tube.	Recovery.	
17	Mrs. H. 23	M. (grass wid.)	Garrett	Gonorrhea.	About 1 year.	Under chloroform, pelvic masses felt.	Large pus tubes; burst during removal.	Yes	Yes; tube in about 48 hours.	Recovery.	
18	Mrs. A. 23	M. (grass wid.)	Cuthbertson	Gonorrhea.	About 2 years.	Mass left of uterus; fluctuating.	Large pus tube left side. Ovary degenerated; ruptured. Right tube and ovary healthy, and were not removed.	Yes	Yes; tube in over 3 days.	Recovery.	July, 1892, hear that patient is in perfect health.
19	Dora H. 23	S. (prostitute) 1 child	J. F. W. Ross	Gonorrhea.	Several months.	Left tube normal size; ovary small; right mass size of orange; fluctuation	Tube on right side 1½ inches thick; small quantity of pus squeezed out. Hematoma of right ovary. Left tube and ovary not removed.	No	Yes; tube removed after 22 hours.	Died in 2⅓ days after opera'n.	Rapid purulent peritonitis. This case should have been flushed.
20	Flor. D. 23	S.	J. F. W. Ross	Tubercle; father and mother died of phthisis.	About 4 mos.	Emaciated; pain in pelvis; attack of peritonitis; cyst on left side; thickening.	Cyst of left ovary. Omentum thickened and congested. Evidences of recont peritonitis. Serum in cavity. Tubes and ovaries adherent and studded with tubercular nodules.	No	Yes; tube removed in 3 days.	Recovery.	July, 1892. Now married, good health. Never been very robust; coition satisfactory. Menses for 1 yr.
21	Mrs. H. 39	M.	Several	Miscarriage	4½ yrs.	Hard mass on left pushing uterus to right; pus in urine. Promised husband not to go on if case very difficult.	Mass on left side intimately adherent to surrounding parts. Unable to remove owing to restriction.	No	Not drained.	Recovery.	Patient no better; heard afterward operated on again. Did not hear result.
22	Mrs. S. 33	M.	Noble	Puerperal peritonitis.	5 years.	Cyst in cul-de-sac.	Cyst of left ovary. Left tube thickened and pus at inner end. Blood in dilatation at outer end. Right pyosalpinx. Right ovary removed.	No	Not drained.	Recovery.	

23	Alice L. 22	M. (prostitute)	Dawson	Gonorrhea.	2½ yrs.	Mass cystic in front, harder behind; uterus imbedded.	Cystic disease in pelvis and double pus tubes. Grape-like cysts found and tied off. Tubes and ovaries "dug" out.	No	Yes; tube removed 4th day, replaced by rubber one.	Recovery.	Secondary syphilis developed soon after operation.
24	Jennie R. 21	S.	Baines	Gonorrhea.	.....	Operated on before by myself (No. 10). Attacks of pelvic peritonitis since 1st operation; watched for some time; enlargement on left side.	Abscess of left ovary size of small orange. Left pus tube, There was no sign of this at former operation.	No	Yes; tube removed in 24 hrs.	Recovery.	Happily married and in good health. Coition satisfactory.
25	Mrs. B.	M.	Burt	Husband had urethral discharge.	2 or 3 months.	Fever; pain; hemorrhage; matting and mass on left side.	Blood cyst of left ovary. Thickened, cheesy tube. Right tube normal in size but full of pus. Right ovary and tube also removed.	No	Yes; tube removed in 28 hrs.	Recovery.	
26	Mrs. H. 33	M.	Pyne	Gonorrhea.	3½ yrs.	Abscess in left groin opened; found sinus running down to side of uterus; mass very hard in front of surrounding uterus.	Tumor between bladder and uterus; adherent to bowel; terrible adhesions. Tumor proved cyst of peritoneum. Grape-like cysts tied off. Left tube coiled up, thickened, and cheesy. Cyst of left ovary; very adherent; size of orange. Unable to remove other side.	No	Yes; tube removed 3d day.	Recovery.	Patient is now troubled with right side. Right ovary enlarging. Sinus in thigh closed.
27	Mrs. M.	M. (grass wid.)	Graham	Gonorrhea.	From 3 to 4 years.	Incapacitated for work; recurrent inflammation; very ill. Case had been diagnosticated as fibroid, as ovarian cyst, and as pelvic cellulitis. Hard mass one side of uterus, and uterus imbedded.	Never met with such firm adhesions; could find no point of entry. Pulled off thickened cartilaginous omentum, and removed, but could not distinguish between intestines, tubes, and ovaries. Endeavored to enucleate, but made little headway, and pulse becoming rapid, was forced to desist.	No	Not drained.	Recovery.	Patient in hosp. ever since operation until last mnth; ill off and on; distention; symptoms of obstruct'n; bloody urine; rise of temp. and pulse. Now 2½ years since operation; does light work. I am afraid a confirmed morphine-eater.
28	Mrs. P. 27	M.	W. F. Shaw	Miscarriage	About 2 years	Mass to left of uterus.	Omentum and bowel adherent; rectum terribly adherent. Tube burst before completely removed. Left ovary enlarged and cystic. Double pus tubes. Operation done over a butcher-shop in the heat of summer. Every antiseptic precaution was taken, but surroundings unsanitary.	Yes	Yes; tube removed 5th day.	Death in about 5 days.	Peritonitis developed second day.

No.	Name and age.	Married or single	Doctor.	Cause.	Length of time progressing	Reasons for operation.	Remarks regarding operation.	Flushing.	Drainage.	Result.	Subsequent course.
29	Mrs. L. 36	M.	J. F. W. Ross	Peritonitis following miscarriage	8 years.	Excessive hemorrhage; mass on each side of uterus.	Both ovaries cystic and enlarged. One, size of small orange, very adherent; other tubo-ovarian cyst. Both tubes thickened and adherent.	No	Not drained.	Recovery.	
30	Mrs. W. 46	M.	Oldright	Gonorrhea; fast in early life.	A week; recent sympts. acute, but pus tubes for years.	Mass left side.	Tube on left side free at uterine end; distended with pus; other end adherent to rectum. Tube burst while being removed.	Yes	Yes; tube removed in 3 days.	Recovery.	
31	Mrs. L. 28	M.	Carveth	Gen. peritonitis; may have followed intra-uterine application; scar showed former joint and bone disease pointing to tubercle.	High temp.; acute attack 5 weeks; trouble present many months.	Mass on each side of uterus; double pus tubes.	Abdomen studded with tubercles; "dug" out two thickened tubercular pus tubes, greatly enlarged; very adherent to bladder and abdominal wall.	Yes	Yes; tube not removed before death.	Death in 36 hours.	Death on second day after operation.
32	Mrs. M. 30	M.	Not mention-[ed	Miscarriage	9 weeks high temperature.	Saturated with sepsis; small thickened mass on left side; tender. Patient so ill, operation done as a last resort. Temp. for days before operation 103°–106°; pulse 100–130.	Omentum anchored. Left tube thickened and very adherent; removed. Right tube thickened and removed. Thick, creamy pus oozing out of it; peritonitis at the time. Abdomen distended.	Yes	Yes; tube not removed before death.	Death.	Death in 24 hrs.
33	Mrs. A. 35	M.	Imrie and Carstens	Probably gonorrhea.	3 years an invalid.	Abscess on one side said to have burst into rectum; pelvic matting.	Uterus retroverted and fixed. Ovaries and tubes terribly fixed. Operation difficult. Double pus tubes and degenerated ovaries removed.	No	Not drained.	Recovery.	
34	Mrs. B. 26	M.	Dawson	Gonorrhea; inflammation off and on for a long time.	2 years.	Mass in pelvis fluctuating; pelvic matting.	Dense omental adhesions. Intestines adherent and matted together. Tumor removed hurriedly. Tube thickened. Evidently pus tubes; scooped out; hemorrhage terrific; feared patient would	Yes	Yes; tube removed 4th day.	Recovery.	Patient so low could not be removed from operating-room till next day;

							die on table. Sponge-pressure to check hemorrhage till pedicle of left appendage could be reached. Abscess of left ovary, size of infant's head, enucleated with left pus tube. Abscess ruptured and flooded abdomen with pus. Omentum nearly as thick as a lady's hand, and firmly adherent. Right tube and ovary not removed.				bandaged arms and legs to keep blood in head; pulse scarcely to be felt.
35	Mrs. U. 19	M.	Leslie	Gonorrhea.	About 1 month severe pain.	Nothing to be felt on examination but recent gonorrhea and acute general peritonitis. Peritonitis set in at 2 A.M.; operation done 12 hours after.	When placed on table pulse 160; distention commencing; temp. 103°; intestines almost scarlet. Semi-glutinous serum escaped. Uterus bound down by adhes. Ovaries and tubes adherent and fixed; removed. Tube swollen at fimbriated end and of a grayish-purple hue. A few drops of pus squeezed from each tube.	Yes	Yes; tube removed 4th day.	Recovery.	Acute general peritonitis.
36	Mrs. M. 30	M.	Cotton Lamb-[ton Mills	Gonorrhea.	Ill off and on for 3 or 4 years.	Unfitted for work; semi-jaundiced condition came on of late. Induration each side of uterus. Under $CHCl_3$ nothing definite. Tubes not large but fixed. Temp. constantly elevated; pelvic pain and tenderness	Dense adhesions. Left tube and ovary removed; patient so collapsed, decided not to remove other side at this sitting as doctor desired it. Adhesions particularly dense to bladder, requiring careful separation and fine ligatures.	Yes	Yes; tube removed in 4 days.	Recovery.	
37	Mrs. R. 36	M.	Bray	Probably gonorrhea.	Trachelor'phy before I saw her; no benefit.	Examination $CHCl_3$. Pelvic matting; adhesions of tubes and ovaries; continued rise of temperature	Tubes and ovaries firmly adherent; peeled out. Cyst of left ovary burst during enucleation. Double pus tubes.	No	Not drained.	Recovery.	
38	Mrs. H.	M.	Not mention-[ed	.....	.....	.....	Left tube removed; hemorrhage free; left ovary not seen or felt; right almost burst into rectum; burst during removal. Actual cautery to tube ends.	Yes	Yes; tube in 30 hrs.	Recovery.	
39	Mrs. F. 32	M.	Not known	Not known; no children no miscarriages.	.....	Front of uterus, left side, cystic mass; also one on the other side.	Evidently old pus tubes that had become cystic, together with enlarged and cystic ovaries. Ovaries nothing but a mere shell, enlarged to size of small orange. Tube distended. Right tube filled with fluid containing an enormous number of cholesterin crystals. Walls of tube thin but coated with deposited lymph, evidently showing the change of a pus tube into a hydrosalpinx.	Yes	Yes, 21 hours.	Recovery.	

No.	Name and age.	Married or single	Doctor.	Cause.	Length of time progressing	Reasons for operation.	Remarks regarding operation.	Flushing.	Drainage.	Result.	Subsequent course.
40	Mrs. L. 20	M.	Walter and Barnhart	Gonorrhea.	About 2 or 3 months.	Pelvic matting.	Hematoma of right ovary. Right tube contained two teaspoonfuls of bloody pus. Both sides removed. Tube dilated and adherent to ovary. Left tube also dilated and glued down by firm adhesions. Ovary fixed but not enlarged. Tube contained about one teaspoonful bloody pus.	Yes	Yes; tube removed in 36 hrs.	Recovery.	
41	Mrs. N. 20	M.	Not mentioned	Gonorrhea.	.....	Mass in pelvis; fluctuating; peritonitis became better, then worse, intermittent attacks; going down hill, very weak.	Abscess of right ovary. Cupful of pus. Hemorrhage free. Tube rotten and thickened. Fat very yellow and in small quantities. Omentum and intestines very adherent. Pus escaped during operation,	No	Yes; tube removed 3d day.	Recovery.	Other side taken out later, No. 46. Only one side done owing to weak condition,
42	Mrs. C. 28	M.	Williams	Probably gonorrhea.	3 mos.	Pelvic inflammation; pelvic matting; double pus tubes.	Dense adhesions; hemorrhage severe; about two hours consumed in controlling hemorrhage. Removed adherent tubes and ovaries. Patient one of family of bleeders. Oozing continued through drainage-tube. Cleared out clot in front bladder; retied pedicle; Trendelenburg used; bleeding found with mirror to be simple oozing from hundreds of points; operation three hours.	No	Yes; tube removed 5th day.	Recovery.	Patient bled through tube; gave up hope. Sister died from post-part. hem. Pulse 150; hands dark-colored and cold. Ferri perchl. sol. injected through tube,
43	Miss D. 19	S.	Wallace	Miscarriage	4 weeks rise of temperature.	Inflammation; pelvic matting.	Omentum anchored; both sides removed. Appendix adherent to bowel; left tube enucleated from among the intestines; adhesions dense. Ovary also removed. Vermiform appendix fixed to intestine. Serous coat of bowel torn two or three places, separating adhesions. Tube adherent to appendix and ileum, ileum to back of uterus; pulse 180.	Yes	Yes.	Recovery.	No hope of recovery when operation completed. Stimulants. Patient rallied.
44	Mrs. O. 22	M.	Galloway	Gonorrhea.	About 2 years.	Diagnosed a year before as pelvic hematocele. Examined $CHCl_3$; pelvic matting; double pus tubes.	Hemorrhage free. Little fat and very yellowish. Large pus tube right side peeled out; tedious. Abscess of right ovary removed; patient much collapsed. Left pus tube and ovary firmly fixed.	Yes	Yes; tube removed 3d day.	Recovery.	Other side removed (see below, No. 51).

45	Mrs. P. 38	M.	McKenzie	Inflammation following application to uterus.	3 mos.	Mass both sides of uterus; pelvic matting. Under chloroform.	Left side adherent only. Sero-sanguinolent fluid from cul-de-sac of Douglas. Right pus tube ruptured. Bloody pus escaped. Right ovary adherent. Left pus tube and ovary removed.	Yes	Yes; tube removed in 48 hrs.	Recovery.	
46	Mrs. N. 21	M.	Operated on by myself before.	Gonorrhœa.	Operat'd on before for other side (see No. 41).	.....	Omentum very adherent. Left side removed; cautery to tubal end. Adhesions very dense; vein in intestines torn; sub-peritoneal effusion of blood as consequence. Omentum torn in shreds, and large part removed. Pulse rapid during operation.	Yes	Yes; tube removed 2d day.	Recovery.	
47	Mrs. T. 35	M.	Carverth	Gonorrhœa.	.....	Constant flow; several miscarriages.	Uterus bound by adhesions. Both ovaries and tubes removed. Left ovary torn in two; bleeding greater from left side. Two large pus tubes. Small grape-like-cysts of peritoneum noticed. Tube burst. Pus flooded abdomen.	Yes	Yes; tube not removed before death.	Death.	Death in about 4½ days.
48	Miss T. 23	S. (prostitute)	Garrett	Gonorrhœa.	2 years.	Pelvic pain; inflammation; uterus backward and somewhat fixed; mass left of fundus; matting general; fluctuation; mass on each side.	Coil of small intestine firmly fixed over uterus and upper part of tube. Both ovaries and tubes removed. Omentum not anchored. Great difficulty in separating intestine. Mouth mirror used so as to carry out separation of adhesions under the eye. Tube ruptured. Pelvis filled with pus. Right tube not dilated but thickened.	Yes	Yes; tube in 18 hrs.	Death.	Death on 26th day.
49	Katie S.	S.	No doctor	Gonorrhœa.	About 1 month	Mass and fluid behind uterus; matting.	Intestines matted together in median line. Adhesions prevented fluid in cul-de-sac from escaping.	No	Not drained.	Recovery.	
50	Miss G. 20	S. (prostitute)	Not mention-[ed	Gonorrhœa.	Not known.	Double pus tubes.	Dense adhesions; tubes and ovaries completely surrounded with intestine. Enucleated two small tubes and ovaries; operation very difficult.	Yes	Yes; tube in nearly 3 days.	Death.	
51	Mrs. O. 22	M.	Operated on before by myself.	Gonorrhœa.	About 2 years.	.....	Left tube removed from a bed of adhesions after some difficulty. Impossible to remove ovary owing to terrific adhesions. Finger in vagina to raise uterus.	Yes	Yes; 8 days.	Death.	On 5th day peritonitis.
52	Miss S. 22	S. (prostitute)	Garrett	Gonorrhœa.	.....	.....	Wall of bladder considerably thickened. Firm adhesions on right side. Both ovaries and tubes removed. Firmly bound by adhesions. Tubes thickened. Pus tubes.	Yes	Yes; 26 hours.	Death.	Peritonitis; death 3 days after operation.

No.	Name and age.	Married or single	Doctor.	Cause.	Length of time progressing	Reasons for operation.	Remarks regarding operation.	Flushing.	Drainage.	Result.	Subsequent course.
53	Mrs. N. 35	M.	Mavety	Gonorrhea.	.....	Pelvic matting; double pus tubes; patient very frail.	Omentum universally adherent and attached to uterus. Both ovaries and tubes removed. Appendix firmly attached to right tube and removed. Enlarged ovary and thickened tube peeled out with great difficulty. Pus escaped from large tube on right side and from rupture of ovary. Pelvis filled with pus. Operation very difficult.	Yes	Not drained.	Death.	Three days after peritonitis.
54	Mrs. L. 33	M.	Gilmour	Gonorrhea.	.....	Mass on left side.	Left tube enlarged and curled up, adherent to rectum. After great difficulty peeled out, also ovary. Dense adhesions. Tube and ovary on right side firmly imbedded in adhesions also removed. Severe hemorrhage from adhesions.	Yes	Yes; 24 hours.	Death in 9 days	After operation hernia of omentum through opening where drainage-tube was placed. Portion of oment'm semi-gangrenous and tied off, rest replaced. Conditions not noticed under dressings until my visit.
55	Mrs. H. 24	M. (grass wid.)	Gilmour	Gonorrhea.	24 hrs.	Pelvic matting.	Enucleation of tubes from dense adhesions. Hydrosalpinx on one side, pyosalpinx on left side. Ovaries as well as tubes removed.	Yes	Yes.	Recovery complete.	Tube removed too soon. Peritonitis developed; subsequent pus formation slow in making its exit.
56	Mrs. B. 30	M.	.....	Probably gonorrhea.	Several months.	Pelvic matting; recurrent peritonitis.	Parts so matted together that I concluded madness to attempt removal. Intestines would have been torn in many places owing to density of adhesions. No line of cleavage to be made out.	No	Not drained.	Recovery.	Looking well nearly a year after operation.
57	Mrs. S.	M.	.....	?	.....	Cyst on left side.	Cyst found, but proved to be fluid beneath old peritoneal adhesions. Ovaries and tubes enucleated from dense adhesions. Peritoneum studded with small cysts. Ordinary cysts of chronic peritonitis.	No	Yes.	Recovery.	

58	Mrs. S. 32	M.	McKinnon	Gonorrhea.	2 years.	Matting; large inflammatory peritoneal cyst behind uterus; double pus tubes.	Several adhesions tied with silk. Enucleated pus tubes with great difficulty. Ovaries also removed.	Yes	Yes; 5 days.	Recovery.	Aug. 25, 1894, saw patient in perfect health; troubled slightly with hives.]
59	Mrs. S. 35	M.	Williams	.....	.....	Large mass which at first could not be made out; thought to be a fibroid.	Enormous abscess left ovary with pus tube. Enucleation difficult. Peeled off rectum from posterior surface of tumor. Tumor burst and abdomen flooded with pus. Cysts hanging from right ovary like small grapes. Hemorrhage free.	Yes	Yes, several days.	Death.	Death second day.
60	Mrs. S. 34	M.	Gillespie	Puerperal inflammation.	14 yrs. before.	Mass on right side; matting; many adventitious cysts.	Abdomen bluish color. Tumor left ovary, although mass on right side; right ovary and tube removed. Many adhesions. Left tube removed. Six inches of rectum peeled from tumor wall. Hemorrhages from adhesions. Tubes and ovaries firmly imbedded in adhesions. Cyst of ovary imbedded in coils of intestine. Small cysts, like grapes, found.	No	Yes, 6 dys. replaced by rubber tube.	Recovery.	
61	Miss B. 25	S.	Myers	Probably gonorrhea.	About 1 year.	Pelvic matting.	Dense adhesions. Both ovaries and tubes bound down by adhesions. Both removed. Right tube dilated. Enucleated left tube and ovary. Abscess broke. Pus escaped.	Yes	Yes, 3 dys; reinserted, then left in 5 days.	Recovery.	
62	Mrs. LeB. 36	M.	J. F. W. Ross	Not known.	.....	Small cyst of left ovary; double pus tubes.	Both ovaries and tubes removed.	No	Yes, for few hours for hemorrhage.	Recovery.	Drainage-tube displaced owing to restlessness and vomiting. Blood from cul-de-sac not thoroughly drained in consequence. Subsequent inflammation.
63	Miss H. 17	S.	Young	Passage of sound to bring on miscarriage	5 mos.	Acute peritonitis. Agglutinated mass of intestine and tube on both sides of uterus. Abscess formed and burst into bladder.	Very dense adhesions; some cut off. Removed tags of omentum. Bladder stripped from uterus, to which it was adherent. Several grape-like bodies found. Both tubes removed.	Yes	Yes.[1]	Recovery.	Very severe peritonitis. Pulse 140 when patient left table. Pulse between 125–160 for 3 weeks; had no idea of recovery; bedsores. Extreme emaciation and cough. Saw her Aug. 21, 1894, the picture of health.

[1] Glass drainage-tube in six days, then washed and returned for two days longer, and then replaced by rubber tube for another week or ten days.

No.	Name and age.	Married or single	Doctor.	Cause.	Length of time progressing	Reasons for operation.	Remarks regarding operation.	Flushing.	Drainage.	Result.	Subsequent course.
64	Mrs. C. 36	M.	Ross	Doubtful.	.....	Pelvic matting on each side of uterus. Fluctuating mass on left side.	Tubes and ovaries adherent, and so bound down it was impossible to remove them. Left ovary enlarged. Cysts of both ovaries. Would have been necessary to take out bladder and rectum to get away the diseased organs owing to density of adhesions. Patient had fully four inches of fat on the abdominal wall.	No	Not drained.	Recovery.	
65	Miss C. 25	S.	Glaister	Gonorrhea; in a bad condition with syphilis.	8 or 9 weeks.	Treated for typhoid fever for 5 weeks. Mass on side of uterus found; transferred. Large mass each side of uterus. Fistulous opening each side of rectum. High fever.	Omentum fixed to enormous pus tubes; gradually enucleated right one; extremely difficult; pulse 162; decided to leave the other. Bowel firmly fixed to tube and peeled off. Oozing excessive. Sponged with brandy and water to check oozing. Hot sponge-packing.	Yes	Yes.[1]	Recovery.	
66	Mrs. W. 32	M.	Burgess	Gonorrhea.	13 mos.	Mass left of uterus; uterine hem'rhage; inflam'tion of bladder; patient very fat but losing flesh.	Firm adhesions. Double pus tubes; very rotten. During enucleation a large tube on left side burst and pus flooded the abdomen. Both ovaries and tubes removed.	Yes	Yes.[1]	Recovery.	
67	Mrs. S. 38	M.	Coulter, Aurora	Puerperal inflammation.	14 yrs; an invalid for 14 yrs.	Pelvic adhesions; everything matted together.	Bowels adherent; firm adhesions; hemorrhage free. Right tube and ovary removed. Left tube enucleated when found, also ovary. Several cysts of peritoneum found and opened. Rectum firmly adherent to uterus.	No	Yes.	Recovery.	Patient the marvel of the town, walking all over after being bedridden 14 years.
68	Nellie F. 20	S.	McFaul	Gonorrhea. Inflammation of bowels five months ago terminated in typhoid fever.	5 mos.	Uterine hemorrhage; discharge of pus from vagina; large mass above and in front of uterus; diagnosis not made; thought it likely pus.	Everything matted in front. Thickened mass over front of tumor; concluded was broad ligament drawn over it, and tumor was thickened. Enlarged ovary imbedded between uterus behind and broad ligament in front. Rectum drawn up on tumor. Enucleation very difficult. Difficult to diagnose from fibroid in broad ligament even with abdomen open. Outer end of tube on left side thickened and filled with pus. Tube about 12 in. long. Hemorrhage severe; sponge-packing; right side not removed.	Yes	Yes.[1]	Recovery.	Left hospital in splendid health.

69	Mrs. E. 30	M.	Hart	Gonorrhea.	2 years.	Mass to be felt in the cul-de-sac of Douglas, fluctuating and extending up under pubes. Diagnosed tumor of left ovary.	Found tube agglutinated to ovary on left side. Enucleated with difficulty. Right tube and ovary bound down by adhesions. Ovary degenerated.	No	Yes.[1]	Recovery.	
70	Mrs. B. 26	M.	Galloway	Gonorrhea.	3 years.	Cyst of left ovary; pelvic matting; discharge of matter from bladder.	Hematoma of ovary. Left tube thickened and firmly adherent. Right tube clubbed at extremity. Ovary imbedded in adhesions. Both sides removed. Right tube contained pus. Very difficult to find the left tube; discovered lying on anterior aspect of broad ligament.	No	Yes.[1]	Recovery.	
71	Miss C. 25	S.	Glaister	Gonorrhea and syphilis.	Operated on by myself before.	.....	Opened up old sinus; tissues so rotten and old one tore down with finger; curetted thoroughly. Used 1 : 20 carbolic. Loosened omentum; found fecal fistula; sutured opening, Halstead stitch. Pulse became so weak, decided to abandon removal of right tube. Closed incision.	No	Yes.[1]	Recovery.	Wound healed by first intention. Fecal fistula closed. Patient improving. Still under care.
72	Mrs. C. 30	M.	Moorehouse	Puerperal inflammation.	.....	Diagnosis very difficult; mass adherent to anterior abdominal wall. Symptoms pointed to pus. Might be myoma arising from rectus muscle.	On opening abdomen found cyst of right ovary with pus tube in front of it. Pus tube adherent and abdominal wall communicating with abscess in sheath of rectus. Much infected, thickened, and cartilaginous. Omentum anchored. Removed right pus tube and ovary, curetted abscess in sheath of muscle. Other tube and ovary left *in situ*. One drainage-tube in cul-de-sac of Douglas and one through rectus muscle.	Yes	Yes.[1]	Recovery.	
73	Mrs. S. 25	M.	Ross	Gonorrhea.	.....	Fluctuating mass on left side; no mass on right side; metrorrhagia with pain and pelvic peritonitis. Continued high temp.	Large pus tube on left side enucleated; other tube healthy at uterine end, but dilated and enlarged and filled with pus at its outer extremity. Abscess of left ovary; right ovary healthy but fixed by adhesions. Both removed.	Yes	Yes.[1]		
74	Mrs. C. 35	M.	Lynd	Not known.	.....	Peritonitis; high fever; failing in health: losing flesh rapidly; mass to left side of uterus fluctuating.	Large abscess of left ovary behind broad ligament, large pus tube running over its upper edge. Enucleation difficult. Hemorrhage severe. Part of ovary and tube removed, then enucleated remainder of cyst from its bed of adhesions. Extremely difficult. One sponge could not be found for some time, but at last found behind uterus, sodden with blood and matter, almost unrecognizable	Yes	Yes.[1]		

[1] Glass drainage-tube in six days, then washed and returned for two days longer, and then replaced by rubber tube for another week or ten days.

HYDROSALPINX.

By A. H. CORDIER, M.D.,
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To the illustrious members of this great Society a discussion of the pathology and treatment of hydrosalpinx will doubtless seem a work of supererogation on the part of the essayist. Many prominent writers and operators, who, from sentiment or desire to make a "grand-stand" play, are writing and talking along this line in tones of so-called conservatism, are operating, as usual, in many instances. Their utterances have engendered a retrogressive tendency on the part of many lesser lights over the land, and a marked increase of mortality from subsequent operative procedures will be noticed as a result of the complications arising in close and distant organs as a sequence of procrastination and tinkering.

A desire to assist in correcting these false ideas and to establish the truth has prompted me to write this short paper, giving my personal observation and experience with cases of hydrosalpinx.

I am fully aware that this, above all other diseased conditions of the Fallopian tubes, has been the one that many gynecic surgeons have looked upon as the least hazardous to life; but when one views the history of a case of hydrosalpinx from its inception it will be found, in the majority of instances, to be that of some old inflammatory disease (pyosalpinx, often) as a predecessor, and the case presents itself as an offspring of a virulent disease, the ravages of which have left permanent and irreparable injury to the delicate structures of the tube, and with no macroscopical appearances of the affected organ or its contents to indicate whether or not the transition from a virulent to an innocent condition has been complete.

That a true dropsical condition of the tube is occasionally found no one will doubt, but such a find is, in the great majority of in-

stances, in the nature of a surprise at the time of the operation, and not diagnosticated beforehand.

Nosologically it would be incorrect to classify hydrosalpinx as retention-cysts. The surgeon sees these cases, as a rule, as sequelæ of some well-marked pathological condition, and the fluid found in them is not the normal fluid secreted by the glands in the tube, as is the case in ranula, pancreatic cysts, etc., but the remains, often, of a purulent fluid changed to a watery one by the death or disappearance of the septic micro-organisms primarily the starters of the diseased condition of the tubes.

The Fallopian tubes are ova-bearing canals. Some authors claim that a menstrual fluid is thrown off by the tubes.

I do not believe that all cases of hydrosalpinx originate as a result of a suppurative disease of the tubes, and the mild cases—those presenting few severe symptoms during their long period of existence, and few adhesive bands and little injury to the ovaries—are cases that probably have their origin in a catarrhal salpingitis or a subinvolution of the tube following a septic "getting up" after a full-term labor or a miscarriage. These cases are rarely diagnosticated prior to operation, hence the fallacy of anyone advising catheterization as a relief or cure.

I have noticed that in examining a thin-walled tube filled with a watery fluid the sensation to the examining-finger was that of a large varicocele in the male—a squirrel-gut feel, with less resistance and pain than those noticed and produced in examining pus-filled tubes, but a positive diagnosis cannot be made from these alone. The adhesions, as a rule, are less firm and the uterus more movable than in pyosalpinx, but it must be remembered just here that we never see an acute hydrosalpinx.

In two of my cases the beginning of the symptoms has dated back to a childbirth followed by a poor "getting-up" and subsequent sterility. In both the tubes were sealed at abdominal and uterine ostii.

In none of my cases are the women unmarried, and all are mothers of one or more children, but in not a single case where symptoms of diseased tubes had existed any length of time had conception taken place after the development of indications of tubal disease. In most of the cases this period of sterility had extended over a period of several years.

Occasional gushes of a watery discharge from the vagina have been mentioned by some writers as diagnostic evidence of the presence of a hydrosalpinx. Sutton says: "There is no trustworthy pathological evidence that these discharges escape into the uterus by way of the Fallopian tubes. The discharge of watery fluid from the uterus in gushes is as yet without an explanation." I cannot quite agree with Mr. Sutton on this point, as I believe that it is possible, and that occasionally a hydrosalpinx does partially empty itself into the uterus. This as a method of cure is a problematical proposition, for even though a cure symptomatically, the tube will remain functionless, and a lasting symptomatic cure is hardly to be expected.

The diagnosis in these cases being doubtful, we cannot prognosticate (admitting a probable cure of a case of hydrosalpinx by drainage through the uterus), in any given case, the outcome of any procedure that is as uncertain in its results as the diagnosis is fallible. Nature's surgery is not the surgery that assists the unsurgical in his incomplete methods.

A Fallopian tube filled with a serous fluid is, no doubt, in rare instances ruptured, the patient none the worse for the accident, and a symptomatic cure is the result; but how many surgeons of today would recommend rupturing these cases into the peritoneum as a procedure of cure? The mere knowledge of the possibility of a rupture of these cases makes an operative procedure for their removal imperative.

In some cases the fluid has seemed to be of the most innocent nature, while in one case I am sure that my patient was saved only by a thorough irrigation and drainage. The microscope and culture-tubes are the only means of classifying the fluid in cases in which the macroscopical appearance makes its character doubtful at time of the operation. The narrowest part of the tube, the uterine end, is especially contracted in this, as in all inflammatory diseases. This is due to the abundant muscular arrangement surrounding the uterine end of the tube during the passage through the walls of the uterus. This anatomical fact would, in a measure, seem to negate the probability of introducing a catheter into the tube from the uterus, and would doubtless result in the closure of same after the catheter was removed, thus preventing permanent drainage. I have endeavored on several occasions, with the tube in my hand, to

introduce the smallest probe into its calibre, but have failed on each occasion. I have asked some of the advocates of tubal catheterization to make similar efforts under like circumstances, and they, too, have always failed.

I have noticed that the ovaries are not so often injured in these cases as in the more acute suppurative processes of the tube. They are usually found bound down with adhesions. This would seem to imply that when hydrosalpinx is a late stage of a pyosalpinx the latter must have been a mild form of the disease. Such I believe to be true. The abdominal ostium has in every case been closed, and in only one specimen did I find the fimbriæ attached to the ovary. I firmly believe that a tube when once closed is from that time on as useless as an ova-bearing canal, let the source of the closure be what it may. I have in one specimen noticed two or more strictures in the tube, all being due to cicatricial bands on the outside of the tube acting as a compressing agent, as is so often the case in intestinal strictures from like causes, differing from the strictures usually found in pus-laden tubes where the narrowing is due to inflammatory new products within the tubal walls. I have seen a specimen that measured twelve inches in length, and with walls so thick and vascular that at first it suggested the idea that a coil of bowel was being ligated and removed. This rare specimen of a hydrosalpinx was in a young married woman from whom a large parovarian cyst was removed, the tube encircling the growth two-thirds of its circumference. This specimen, unfortunately, was lost.

Hydrosalpinx has been a complication of uterine fibroids in two or three of my abdominal hysterectomies. Pus-filled tubes have also been noticed a number of times as complications of these neoplasms. Many writers assert that the disease is unilateral, but in all of my cases both tubes have been affected. In one case I found a pyosalpinx on one side and a hydrosalpinx on the other.

Simple catarrh of the tubes running a short, mild course may not seal the tubal ostii, and in such cases a cure is the rule; but where the inflammatory process is so severe and persistent as to close these openings a permanent drainage is wrought and Nature is not, as a rule, a competent surgical guardian to look after and remove the pathology.

Several cases have been reported where death took place as a

result of a twisted pedicle and strangulation of a tube filled with a watery fluid. If the theory that the mucous membranes of the tubes bleed monthly is true, this makes the removal of a distended tube imperative, for with closed ends, thinned walls, and filled with fluid of a doubtful character, with the likelihood of a rupture from a rapid menstrual distention, there are dangers of a serious nature, and to be averted only by the removal of the tube. A fatal hemorrhage may occur as a sequence to a rupture of a hydrosalpinx, a condition often simulating a ruptured tubal pregnancy both in its constitutional manifestations and local physical signs on examination. I have in the last year had two such cases in my practice. In one of the cases I diagnosticated, before operating, extra-uterine pregnancy with rupture. She was in collapse from intraperitoneal hemorrhage at my first visit. She was twenty-nine years old, youngest child six years old, menstrual history one of irregularity for last three months, sudden severe pain in region of left tube, followed by symptoms of internal bleeding. Operation revealed a belly full of blood and a ruptured tube near its distal end. The tube was very thin, and its minor walls perfectly smooth, with no evidence of placental attachments at a single point, calibre large enough to admit two fingers. Abdominal ostium completely closed. The pathology in this case demonstrated two truths: first, that all hemorrhages into the peritoneum, of an alarming character, taking place from a ruptured Fallopian tube are not of necessity of extra-uterine pregnancy origin; and second, that a distended Fallopian tube, filled with any fluid, may rupture from any rapid distention and cause death either from a septic peritonitis or from loss of blood.

In one case the uterine extremity of the tube was largely dilated and filled with a clear fluid, while in the ampulla there existed a collection of pus separated from the clear fluid by a complete and closed stricture. This state of affairs may exist in any case, and a knowledge of this fact should admonish all to lay aside the vaginal vault trocar and tubal catheters, and do surgery. Any procedure that approaches the surgical, if not done in a surgical manner, will bring disappointment and disaster to both the patient and the doctor. Incomplete work is always unsatisfactory to all parties concerned.

THE PRESENT STATUS OF THE TREATMENT OF PELVIC INFLAMMATION:

Or, How Shall We Deal with Pelvic Inflammatory Troubles?

By WALTER B. DORSETT, M.D.,
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It will be observed that the title of this paper is an interrogation, and is intended as such to the members of this Association. It is more for the purpose of bringing out a discussion of the subject than to attempt to lay down any set rules or laws for our government. We are generally guided in the treatment of any case, whether medical or surgical, by rules, either written or unwritten, that have been deduced from statistics of so-called eminent physicians or surgeons. Whether eminent through their frequent publications in periodical journals or from what they have to say in their local societies, it matters not; and, while we may think they occupy exalted positions, we must remember that often "distance lends enchantment to the view," and that we must not be deluded by their statistics; that, while these statistics are intended as a fortress provided for our defence, we should never lose sight of the fact that they are not reliable, that they have here and there weak places through which the deadly missile of personal experience too often penetrates. Of the two contestants on the field, then, Statistics and the sayings of others *versus* Personal Experience, I will choose personal experience every time.

In the consideration of the subject before us I know of no better friend save the opinion of an honest, trustworthy brother practitioner whom I know well. I must know him well in order to know what his personal experience has been in dealing with such cases, so as to judge of its intrinsic value. Statistics and reports,

in my humble experience, do not weigh very heavy, then, in the balance. I have known of so-called successful surgical operations to be reported in societies when, within twenty-four hours after the report, the party operated upon was in a hearse on his or her way to the cemetery. These reports find their way too often into the journals, then into some "annual," or are gathered up by some energetic compiler and go to make up, each as an integral part, statistics, and from statistics are deduced laws and rules for our government.

No department of medicine has, within the past few years, taken such advanced steps as has the surgery of the pelvic viscera, and in order to reach the goal we may have run at too rapid a pace and far overreached ourselves in our efforts to do just the right thing.

Abdominal section for the cure of forms of tubal, ovarian, and other pelvic abscesses has probably been the uniformly practised procedure for the past ten years, and, on account of quickly reported cases and manipulated statistics, has gained a foothold, as it were, in the profession. Electricity has made a feeble fight against the surgical methods of today, but is losing ground, and ere long will die a natural death.

Since it has been an established fact that pelvic cellulitis does not often exist, that it is the rare exception to the rule in the consideration of pelvic inflammatory troubles, electricity no longer has the substance upon which to feed, and is quietly taking its leave in search of greener pastures. What in the majority of instances was taken for cellulitis *per se* were cases of abscess within the tube, in the peritoneal cavity, or in the structures between the layers of the broad ligament; when within the layers of the broad ligament they were and are today cases in which the abscess formed in the tube and ruptured into the cellular tissue between the two folds of the peritoneum forming the broad ligament. One exception to this is where a septic inflammation has arisen within the uterus, the uterine cavity itself acting as a reservoir of poisonous material, which is sucked through the lymphatic vessels into the cellular tissue and there sets up a diffused inflammation, which may or may not pervade the entire subperitoneal pelvic space, thus fixing the uterine body, or, to use the stereotyped expression, "make it feel like as if it is in a plaster-of-Paris mould," producing true cellulitis. The

only other and last exception is the result of traumatism, direct or indirect violence.

Now, where this is the condition existing, electricity applied within or without the uterine cavity cannot do any good, and when there is pus existing or liable to form it is apt to do a great deal of harm.

Scrape out, clean out, swab out, wash out the uterine cavity, and follow your cleansing with proper antiseptic dressing, and you place your patient in the best possible condition to recover from cellulitis. The cellulitis is entirely, to my mind, a secondary condition and often dependent upon a foul uterine cavity. Take, for instance, a puerperal case due to a retained placenta, one with a temperature of 103° F. Clean out the uterine cavity, follow the cleansing with a hot bichloride intrauterine douche, and take the temperature two hours afterward, and you will find the temperature 101° or less.

What now, may I ask, has brought about this sudden fall of temperature, this marked change in the facial expression, this return of good pulse, this freedom from pelvic pain? Why, our curette has scraped and our intrauterine douche-tube has washed out the stagnant pond, the reservoir of poison has become a thing of the past, and the only reason the temperature is not normal is that there still remain some toxic elements in the general system, the ill effects of which will by proper systemic treatment soon become eradicated and our patient be restored to health. Would the electrician dare to apply his electrode in such a case? Then why, may I ask, should he in the other?

It has not been so long ago that some of us may not have forgotten that the gynecologists were taken to task by the neurologists for their pernicious meddling with the womb. They were accused of persisting in examining females when the occasion did not demand it, and were styled the moral rapists, as it were, of the profession. Probably the erudite neurologists only conceived of the danger the gynecologists might do by sewing up here and there a lacerated cervix, of introducing now and then a pessary, or swabbing out a vagina, or artistically painting and decorating a cervix with iodine. These proceedings, in the minds of the neurologists, I take it, were about all the gynecologists were capable of doing. Perhaps when this accusation was made gynecology comprised but little else. Since then, however, she has advanced far beyond simple tinkering.

Did it ever occur to the neurologists, after a faithful trial of bromides, chloral, nux vomica, lady's-slipper, infusions and decoctions of herbs and roots, prepared possibly by their own hands or under their personal supervision, the use of the electric battery, the electric fan, etc., on a hysterical or neurasthenic female, that possibly the patient was suffering from a pelvic inflammation occasioned by a foul womb, a mucous membrane that had been absorbing and distributing constantly toxic elements that are coursing through the system of the fair female, poisoning her whole system, producing symptoms that might easily tally with those of neurasthenia?

Neurasthenia? Of course neurasthenia—*nerve-prostration*—brought about by a continuous absorption of toxic elements, producing general prostration, headache, restlessness, insomnia, frequent sighing, cold and clammy feet, gloominess, muscular weakness, inability of thought-concentration, loss of interest in business or the family, and the like.

What greater cause could we wish for or expect to produce these symptoms than the continual absorption of toxic elements through the lymphatics from the uterus?

It is when the gynecologist of today meets with such cases and carefully inquires into their histories—as, for instance, whether or not the patient has lately miscarried, or when last she passed a probe into the uterus for the purpose of frustrating the laws of Nature (and this is not an idle question in these days of small salaries and smaller families)—that he is, occasionally at least, enabled to find a pelvic inflammation (although the patient herself may not have complained to her physician of any pelvic trouble)—a pelvic inflammation that is due to a foul uterus, which he promptly cleans out and antisepticizes, at the same time paying due attention to the emunctories, and restores his patient to health, that he is enabled to score one against the neurologist. The gynecologist has removed the cause of the trouble, the neurologist has treated the symptoms. The one cures, the other tinkers.

If we have an endometritis pure and simple, take time by the forelock and clean out the uterus before the lymphatics take up the poison and carry it into the subperitoneal pelvic space, or the tubes take it up to form a pyosalpinx, an ovarian or a peritoneal abscess. When once the case has been allowed to go so far (perhaps through your neglect), the condition has become grave, indeed, and calls for

far more heroic surgical treatment—so grave, indeed, that we must now put on our thinking-cap and consider what is best to do under the circumstances. Shall we make haste and open the belly, take out the tubes and ovaries, unsex the individual? And shall we do this in so many minutes and seconds? Shall the operator have his timekeeper standing behind him with his split-second watch in hand, ready to yell out "Four minutes fifty-nine and three-quarters seconds" as the last ovary is snatched from the belly? Does not this surgeon soliloquize thus: "The last operator did it in five minutes, but the record must be broken, and I am a record-breaker?" In my opinion a rapid operator is not a safe operator, and as a rule places little value on human life, but is generally proud of his statistics. I appreciate dexterity coupled with rapidity in abdominal surgery, provided it is clean work and good work. But no work can be done well when *time* seems to be the desideratum. Judging from what we see now and then in journals of quick abdominal work, one would be led to believe that the official timekeeper to Surgeon So-and-so will be as necessary in the near future as the anesthetist, and the split-second watch of as much importance to the race-horse, railroad-time-table surgeon as are now the knife, artery forceps, and braided silk ligature.

Can we not by other means often relieve inflammatory troubles by more conservative surgical measures? It has been, for some unknown reason, stated in certain surgical text-books, and by some operators, that to open an abscess in the cul-de-sac of Douglas through the vagina is unsurgical and unscientific. Now, there is no good reason for such a declaration. Such a statement needs an ample amount of qualification. Simply to let out the pus that has gathered from a leaking, corrugated, crippled tube would be, and should be, considered to be only a preliminary procedure. The operation to be done in such a case is total ablation of the tube and ovary. If the pus alone is the offence and the anatomical structures are not impaired, then, by all means, stop after you have incised the abscess. Do not remove the tube simply because it is a carrier of pus into the peritoneal cavity. Open your abscess that has formed in the cul-de-sac, and clean out the uterus to prevent any possible chance for the tube to gather up and convey any more pus to refill the cul-de-sac of Douglas.

W. M. Polk, of New York, formulated the propositions in his

paper entitled "Operations on the Uterine Appendages with a View to Preserving the Functions of Ovulation and Menstruation," in the following language:

1. As a rule, women are the better mentally and physically for the maintenance of menstruation and ovulation up to the period of Nature's menopause.

2. The minor discomforts which pertain to the function, even though they be clearly dependent upon the ovary and tube, do not require removal of these organs.

3. The appendages may be operated upon to the promotion of childbearing (four cases out of eighty).

4. Disease of the appendages does not always demand complete removal, certain conditions permitting partial removal.

5. The condition of the ovary should be the chief factor in determining the question of procedure.

6. If the ovary contains pus, it and the associated tube should be removed, it being the rule that whenever an ovary is removed the tube must accompany it.

7. If the tube contains pus, the ovary being free from pus or disseminated degeneration, the operator is at liberty to amputate the tube and leave the ovary. The same rule may be applied to hydrosalpinx and hematosalpinx.

8. Cysts of the ovary do not demand its removal, provided they are not general throughout the organ and can be enucleated, hematoma of the ovary being a possible exception.

9. Tubes with open infundibula, even though adherent and affected with parenchymatous inflammation and endosalpingitis, do not demand removal except when one opens into a pus cavity.

10. A tube whose outer end is closed and yet otherwise is in good condition, may be opened, cleansed, and its inner and outer coats coaptated, and then be returned to the abdominal cavity, provided it does not contain pus; possibly the same may apply to old blood.

11. Adhesions do not demand the removal of the tubes and ovaries, unless they be so dense that in breaking them the appendages are seriously injured. This presupposes that the appendages in themselves are not sufficiently diseased to demand removal.

12. In all cases of subacute or chronic tubal disease it is of the first importance to treat the interior of the uterus; curetting it with

a sharp curette and then firmly packing it with gauze being the best method of treatment.

It may be that Polk is too conservative, but he is far safer than the other extremist.

But this is the point I wish to lay special stress upon,—namely, in all cases where it is possible to do so—and there are many—open all abscess cavities before extirpating the tube and ovaries. If in the subperitoneal cavity between the layers of the broad ligament, make your incision through the vagina; if it has been due to ruptured tubal abscess, and the tube has taken on such pathological changes as to unfit it in function, it can be taken out at some subsequent time, provided it is the cause of the trouble. By this evacuation of pus through the vagina the patient is often saved from the danger of shock, as in a laparatomy. If a laparatomy is done, a great deal of pus is encountered, and anyone who is accustomed to do much abdominal work knows what this means. It calls for sponging and washing, and finally the drainage-tube. If in the tube near the uterine horn, dilate the uterus and pack the horn, and you will be rewarded with, in all probability, an evacuation of pus through the uterus into the vagina. In doing this I know full well that it is possible to dilate the tube and evacuate the pus sac.[1] If an abscess has formed near the abdominal end of the tube, and perchance the ovary is involved and cannot be reached through the vaginal vault, then, of course, abdominal section is the only thing to do. But allow me to relate a case:

Mrs. M., in November last, sent for me to see her for an inflammatory trouble in the pelvis. She had had, I was told, a miscarriage a week before. I found her suffering intensely, pulse feeble, and the whole body bathed in sweat; an offensive odor pervaded the entire room. Upon making a vaginal examination I found a badly decomposed placenta just within the internal os. I removed it immediately with the placental forceps, and, putting her under chloroform, curetted and washed out the uterus and then packed it with iodoform gauze. I was aware that the poison had gone further and that I should have to do something more, but it was

[1] See my article entitled "The Location of Tubal Abscess as an Indication for its Treatment," American Journal of Obstetrics, 1892, vol. xxvi., No. 2; also some "Further Experience in the Dilatation of the Fallopian Tube for the Treatment of Abscess," Transactions of the Missouri State Medical Association, 1893.

too late in the day and I had no assistance. On the next day I got assistance and put her again under chloroform and began to make a celiotomy. After I got into the belly and struck the abscess, from which flowed at least two pints of offensive pus, I noticed that my patient was taking chloroform very badly; and fearing she would die on the table, and not being able to get the tubes and ovaries free from their adhesions without using force and time, I hastily washed out the abscess cavity, put in a drainage-tube, and closed the abdomen. Gentlemen, I am happy to say she is today a well woman and is menstruating regularly and suffers no inconvenience. I certainly think that under the circumstances I did the best thing. Had she taken the chloroform well and had the pulse been good, I might have dug up the tubes and ovaries and taken them out; but as it happened I did not do it, and she got well all the same.

Deductions. 1. Pus in quantities is hard to deal with down in the pelvis in laparatomy cases, and, if possible, should be evacuated prior to taking out the tubes and ovaries, either through the cul-de-sac of Douglas, or, if between the layers of the broad ligament at the side of the uterus, do your laparatomy at some future time.

2. Pus sacs in the tube near the uterine end of the tube can be evacuated through the uterus by packing the horn.

3. Parametritis, or cellulitis of the ancients, is, except in rare instances, a secondary trouble, due to a foul uterine cavity. Clean out the cavity and stop the source of poison, and you do the best thing possible to be done.

These are my convictions and are honestly stated. Take them for what they are worth and give us yours, and let us compare notes.

THE RELATIONS OF RENAL INSUFFICIENCY TO OPERATIONS.

By C. C. FREDERICK, M.D.,
BUFFALO.

During my entire experience in the practice of medicine I have been much interested in the relations of excretion to health and disease. During my experience as an operator this interest has been enhanced by observing the results of operations as dependent on the patient's general bodily condition. So-called vitality is really the resistance which the system offers to disease, and depends entirely upon the healthy condition of each organ which has to do with building up the tissues and getting rid of tissue-waste. Of all of the bodily functions in this relation, none holds quite so important a place as the condition and working-power of the kidneys.

Gynecologists have done more in the past two years to develop this subject than have the general surgeons. Very few have written on this subject. There is nothing in the standard text-books about it.

Dr. Coe,[1] in his first paper on this subject, states that "inquiries addressed to a number of prominent operators showed that some regarded albuminuria as a positive contra-indication to operation others as of no significance, and others never examined the patient's urine at all."

To deny a patient operation because she has albuminuria simply, is wrong; to say that the albuminuria she has may not be of significance without further investigation, also is wrong; to disregard the character of her excretions if she is to undergo an operation, still is wrong. Each of these attitudes is a gross injustice to the patient. In this connection there are many factors to consider, and a chance

[1] Contra-indications to Laparatomy, etc.

for the exercise of much discretion, before a conclusion can be reached which will be doing justice to the patient as well as to the operator.

Observations have been going on for several years, and now there are enough data upon which to formulate a concise opinion as to the relations which exist between renal insufficiency and operations and the rôle that anesthetics play in the results.

I wish to occupy your attention for a brief statement of some conclusions which I have drawn from observations of nearly three hundred operations at the Buffalo Woman's Hospital, and at the same time supplement them with those of gentlemen who have either written upon this subject, or with whom I have had correspondence concerning their experiences and opinions.

By the term renal insufficiency I desire to be understood as meaning any state or condition of the urine showing deficient elimination of waste-products, whether from functional inactivity or from lesions of the kidneys.

If the question be asked whether renal insufficiency is a contra-indication to operation, the answer must be determined by the consideration of three factors: 1, the amount and nature of the renal insufficiency; 2, the character of the lesions for which operation is proposed; 3, the causal relation which the patient's disease holds to the renal insufficiency.

On admission to the hospital my custom is to have the patient's urine collected for twenty-four hours. If she be menstruating or has an abundant muco-purulent discharge, albumin will surely be found. To avoid this source of error she is catheterized. The twenty-four hour' sample is measured, reaction and specific gravity taken, then examined for albumin and sugar. If there be albumin, a low specific gravity in proportion to the amount voided, or if there be sediments, it is examined microscopically. If there be a suspicion of renal lesion, the urea is determined quantitatively. The presence of albumin, pus, and blood in the urine may be accounted for by cystitis, ureteritis, or pyelitis, but the quantity and specific gravity will not be affected, and casts will be absent.

The principal facts to ascertain are, whether the quantity of urea and solids excreted in twenty-four hours is below normal; and, if so, whether there are tube-casts or other evidences that the deficiency is dependent on true renal lesions. Therefore the twenty-four hour' sample is absolutely necessary for every examination of urine which

is to carry with it solid facts upon which to base an estimate of the working-power of the kidneys.

The question is not the presence of albumin, hyaline, or a few granular casts, but, Are the kidneys crippled? The mere presence of albumin and hyaline casts in the urine, unless there be deficient excretion, therefore portends no evil. They are often transient.

Some gynecological patients on entrance are found to be voiding as low as eight or ten ounces daily, and that not of high specific gravity. Women with chronic endometritis especially are liable to this. Such women do not take much fluid. I do not operate until I have given them some preparation, which consists in taking water freely and keeping the bowels and skin free. In a few days they pass much larger quantites of urine of better specific gravity. These are not good subjects for prolonged anesthesia without this preliminary preparation.

If the quantity of urine is above twenty ounces per day, of specific gravity 1015 to 1018, the quantity of urea not more than 25 per cent. below normal, even if there be albumin, hyaline or a few granular casts, my experience is ably seconded by my correspondents, that there exists no real contra-indication to a necessary operation.

The knowledge of this condition renders it possible for the operator to take extra precautions to avoid too prolonged anesthesia by doing a rapid operation, and thus saving a life when it might be sacrificed if ignorant of the true conditions.

Another point of importance is, that an operator may be led to do an operation at an earlier date, because the condition of the kidneys shows beginning disease, which may have for its cause some obstruction to the ureters in the pelvis, thus forecasting what might be in the future much more serious renal trouble. Hence discovery of beginning renal disease may lead the operator to advise immediate operation for growths which otherwise might show no urgent reasons for removal.

If the quantity of urine be persistently small, twelve to fifteen ounces, of low specific gravity, a much decreased elimination of urea, whether there be much albumin and tube-casts or not, it is more than questionable whether operation should be done for a condition which is less serious than the kidney disease itself.

A plastic operation, a section for inflammatory disease of the

pelvis without pus, would hardly be justifiable in such conditions of the kidneys. However, if there were pus in the pelvis, or a large tumor producing these pressure-symptoms, an operation would be justifiable.

Often the renal condition is the result of the chronic invalidism and systemic infection incident to pus collections in the pelvis. Remove the cause, and if the patient survives the operation she may entirely recover. The operator is justified in taking larger chances in puriform disease of the pelvis than in any other condition except large tumors. Sometimes the renal symptoms are serious, due to increased intra-abdominal pressure by a large tumor, in which event the prompt removal of the growth is the most rational and certain way to relieve the renal symptoms. Such cases are an exact parallel to those we see in pregnancy, when, by delivering we relieve the pressure, the kidney activity is resumed and the patient recovers.

There are cases of extreme gravity, such as ruptured ectopic pregnancy, where the patient is in great immediate danger. In such, renal conditions cannot be considered. Operation is imperative.

Contracted kidney (chronic interstitial nephritis) is the most commonly fatal lesion after or at operation. It is also the most liable to be overlooked. It is difficult to diagnosticate, the quantity of urine voided is so frequently deceiving by its abundance. There may be no albumin, or, perchance, a trace. Microscopical examination may fail to discover a cast. At times they may be found. One condition is usually common, the extremely low specific gravity.

If, after repeated examination, the urine continues to present these characters, it is not safe to operate. I have twice refused operation under such circumstances, and the patient died soon from the kidney disease.

Nearly every operator whom I have met or have corresponded with has had deaths from contracted kidney, after operation.

It is the general observation of operators that their patients pass less urine than normal for several days after operation, not only after abdominal section but after plastic operations. To a certain extent this may be accounted for after sections by the smaller quantity of fluids ingested for the first twenty-four or forty-eight hours. I do not believe, however, that this entirely explains the almost total suppression which at times occurs, and sometimes endures to an alarming degree before secretion again begins. I believe that the

anesthetic is one factor in this production, and that shock, especially in abdominal sections, is the other and larger one. The functional power of the stomach is abolished, intestinal peristalsis is inhibited, and there is present that intense peritoneal thirst, all showing shock to the solar pelxus and other sympathetic nerve centres.

In suppression, or partial suppression, following operation drugs are of no avail. Water by stomach, or, if vomiting, by the bowel, together with cups over the kidney, steam baths or the hot pack accomplishes the restoration of renal activity if it can be re-established. Real suppression I do not believe can be overcome.

Does renal insufficiency render the patient more liable to shock or slower convalescence?

There can be no question that shock occurs most frequently in women having renal lesions, because of their lower vitality and decreased power of resistance. That the convalescence is retarded seems reasonable, from the fact that recovery, especially after a major operation, depends so much upon the rapidity with which effete products are excreted.

The danger of operating on all patients with chronic lesions of the kidney is the occurrence after operation of acute congestion. This may even occur, and often does occur, to a marked degree in patients who have no well-marked disease of the kidney previous to operation. There may develop *de novo* after operation congestion, acute pyelitis, or interstitial nephritis. Dr. Coe has observed acute congestion so intense as to result in punctate hemorrhages.

Dr. George B. Wood, of Philadelphia, has recently made a valuable series of experiments on dogs, some having healthy and others having diseased kidneys. He found that ether exists in a free state in the blood during and for some time after inhalation. Ether is not excreted by the kidneys to an appreciable amount; the kidneys of healthy dogs become congested, and on microscopical examination the cells show cloudy swelling. The cells of the convoluted tubules are primarily affected, the tufts and collecting tubules only evincing change when the anesthesia had been prolonged. Repeated administrations of ether, if kept up long enough, would probably cause desquamation of the epithelial cells. In cases where uremic poisoning was beginning to make itself apparent, it was shown that there existed a liability to sudden death during ether-narcosis, due to the action of ether on the already depressed centres of respiration.

Dr. Russell has shown, in observations of two hundred gynecological operations at the Johns Hopkins Hospital, that albumin appears in a large number of cases for the first three days after operations, in whom no albumin was found previous to operation. There were 10 per cent. more who had albumin after than before operation, and thirteen cases had hyaline casts and five had granular casts who did not have them before operation. This shows the marked effect that anesthesia and operation have upon the kidneys.

Wunderlich (*Centralblatt für Chirurgie*) reports on the examination of one hundred cases of ether and chloroform narcosis. The urine was examined chemically and microscopically before and after operation.

He reports that in all cases taking ether, in whom albumin is present before operation, the amount of albumin is greatly increased.

He seldom found albumin or casts appeared after ether when none had existed before. In conclusion, he says the so-called "ether nephritis" may be excluded from medical literature.

His observations on the effect of chloroform are that albumin and casts are frequently seen in the urine after its inhalation, usually disappearing in from twenty-four to forty-eight hours.

He believes that both ether and chloroform produce an ischemia of the kidney or an increase in blood-pressure, thus accounting for the casts and albumin.

Rindskopf (*Centralblatt für Chirurgie*) reports ninety-three observations on chloroform narcosis. In thirty-one cases, exactly 33⅓ per cent. albumin, casts, leucocytes, and epithelial cells were found in the urine. In the majority of the cases the urine cleared up after seventy-two hours. The quantity of chloroform given influences the character of the urine. No case should be chloroformed every three or four days, as the kidneys will not have had time to recover.

There is prevalent among a large majority of our best operators a belief, which has been freely expressed to me in correspondence, that chloroform is the safer anesthetic in renal insufficiencies. Yet many of them have reported deaths from suppression of urine or uremia after its administration. The deaths from chloroform seem to be quite as frequent as after ether-narcosis.

It is interesting to note that Wunderlich ascribes to chloroform more irritating properties, as far as the kidneys are concerned, than he does to ether.

A few gentlemen with whom I have corresponded still give their allegiance to ether, because they say its after-effects are no worse than chloroform, and that it is safer during the period of administration.

It does not seem that clinical experience, as deduced from the observers whom I have quoted, carries out the widely extant impression that ether is contra-indicated in renal lesions or insufficiencies.

From the foregoing I would deduce the following conclusions:

1. Every patient's urine should be examined quantitatively and qualitatively before operation if possible.

2. Minor degrees of renal insufficiency and minor degrees of renal lesions are not contra-indications to operations.

3. The graver forms of renal disease are contra-indications to operation, except it be for disease or growths which have a causal relation to the kidney disease.

4. Patients are more liable to shock and slow convalescence after operation when suffering from kidney disease.

5. Patients may develop acute renal congestion *de novo* after operation, and are especially liable to do so if there have been old lesions.

6. That there seems to be little choice between chloroform and ether as the anesthetic in renal insufficiency, both alike producing congestion.

SOME RESULTS OF ETHER ANESTHESIA IN ABDOMINAL OPERATIONS, WITH SPECIAL REFERENCE TO ITS ACTION UPON THE KIDNEYS.

By I. S. STONE, M.D.,
WASHINGTON.

THE selection of an anesthetic is always important, sometimes difficult, and requires no small degree of skill. During the past few years the writer has observed some lethal results of ether anesthesia which, in his opinion, should be placed on record, and be added to the constantly increasing information as to choice of anesthetics. It has been well said by others that when chloroform kills, it does so at once and shockingly. Ether does not kill so promptly, but it is not absolutely safe, and may cause the death of the patient many days after operation. The following cases are briefly reported to show how the kidney may be influenced by the administration of ether when previously altered by disease which escaped the usual tests made preliminary to operation.

CASE I.—Mrs. G. had laparatomy for large pelvic abscess. Complete extirpation of adnexa, which were disorganized by long-continued suppuration. Several ounces of pus were discharged. The urine was examined by the house physician, who failed to find pus or albumin. The operation was quickly done, a drainage-tube placed in position, and the patient put to bed in good condition. She did not bear the ether well, was much cyanosed, and required a large quantity of the anesthetic. Six ounces of densely albuminous urine were secreted by the kidneys during the twenty-four hours the patient survived operation. She appeared to die of shock, which came on during the night after the section. At the autopsy both kidneys were found undergoing degenerative change.

Well-marked nephritis of both organs, with pus in the pelvis of the right.

CASE II.—Mrs. M. Death following enucleation of the uterus after the so-called Pratt method.

This patient was anemic, and I endeavored to remove the uterus without opening the peritoneal cavity. The operation lasted one hour, and was followed by shock, which resulted fatally in eighteen hours. Only three drachms of urine were secreted after section. Autopsy showed nephritis on both sides. The examination of the patient's urine before operation did not show the presence of albumin.

CASE III.—Miss R. Operation for pyosalpinx. Death in forty hours. Nephritis and bowel obstruction from congenital stenosis of splenic flexure of the colon.

The operation was completed satisfactorily in forty-five minutes. No shock or trouble of any kind until the obstruction gave trouble the next day after section. Only a small quantity of ether used. Dr. Reed, of the Army Medical Museum, reports "advanced fatty degeneration of the kidneys" in this case. The patient had been sick only three weeks, and appeared to be in excellent condition for operation. Her urine was examined twice for albumin, with negative result. Eight ounces of albuminous urine were secreted after section.

CASE IV.—Miss S. Operation for pyosalpinx. Patient had only one kidney. Death in forty hours from shock and suppression of urine. A slight trace of albumin was found in the urine of this patient prior to operation. The operation was not difficult and lasted twenty minutes. She had a feeble pulse, but appeared to be in prime condition in other respects, and a very favorable prognosis was given. Ether in this case was very unsatisfactory, causing dyspnea and severe cyanosis. She secreted two and one-half ounces of urine during the forty hours she survived operation. At the autopsy the right kidney was found riddled with tubercular, cheesy deposits. Its ureter was packed tightly with the same material, and could not have secreted urine for months before. The left kidney was large and not apparently involved. The heart was small and undergoing "brown atrophy." (Dr. Walter Reed.)

These cases were not subjected to prolonged anesthesia. The vis-

cera were not unduly exposed or handled, nor was there loss of blood or septic infection at the time of operation.

My experience confirms that of Dr. F. B. Robinson, of Chicago, in reference to the presence of albumin in the urine after abdominal section.

Of the whole number of observations made by my assistants with reference to the presence of albumin after operation, it may be said that the rule was to find it in every case where there had been prolonged suppurative disease necessitating abdominal section. In tumors which by reason of their size and ill effect upon the patient's health albumin will also be found to appear in small quantity, especially if ether be used. Prolonged operations may be followed by corresponding shock, and this condition is similar to that produced by the anesthetic. The author would not have it appear that surgeons should avoid operations upon subjects who have albumin in their urine. No patient should be refused for this reason, who needs a life-saving operation. Even with albumin and casts both present patients survive hysterectomy and other formidable operations. We frequently see albumin promptly disappear from the urine of patients who have had large tumors, and even in other conditions, where a hesitating policy would mean the patient's loss. Finally, the indications are not clear which should guide the surgeon in the choice of an anesthetic. This is easily shown when we see how many surgeons employ one anesthetic almost to the entire exclusion of the others.

In many hospitals ether is used exclusively. In others, and especially in the South, chloroform is generally preferred. It is probable that either anesthetic carefully administered by experts would give better results than the present statistics show. So long as students and amateur surgeons are selected to administer anesthetics just so long will *accidents* happen. In every large town, and especially every city with numerous hospitals, there should be experts who are competent to administer anesthesia, and who do not operate nor care to watch the various steps of an operation. By arranging the hours for operation one such expert anesthetist could serve two or more hospitals, and besides fill other private engagements.

THE CAUSE OF THE THIRST FOLLOWING ABDOMINAL SECTIONS.

By EUGENE BOISE, M.D.,
GRAND RAPIDS.

I HAVE ventured to bring before you these observations on the cause of the thirst which so invariably follows even the simplest abdominal section, not merely that I may offer an explanation which appears to me more than plausible, but with the hope that I may elicit valuable discussion from the other members of the Asssociation. I am, however, aware that the discussion of this question must be more in the nature of suggestion as to the probable cause than demonstration or proof.

Thirst, as generally felt, has been defined as a sensation referred to the back part of the mouth and throat, which conveys to the consciousness the fact that the system needs more water. This sensation is referred by our consciousness to this point, but does not originate there; nor is it caused by the dryness of the mucous membrane at that point. Experiments have been made which show that though a large quantity of water may pass through the mouth and throat, the sensation of thirst is by no means assuaged until a sufficient quantity has been absorbed by the stomach.

I say by the stomach, because the feeling of thirst is allayed more rapidly by the introduction of sufficient water into the system through the medium of the stomach than by any other channel.

Injection of quantities of water into the bowels rapidly allays thirst, as does also, to a very moderate extent, the immersion of the body in water, but the stomach seems to be the natural medium through which thirst should be assuaged.

This fact has a certain bearing, I think, on the origin of the sensation of thirst, as I hope to show later on.

Thirst, generally speaking, is an indication that the tissues of the

system have been deprived of their normal amount of water, and may be said to be a demand that that water shall be replaced.

It is caused by anything which reduces the amount of water in the system, such as hemorrhage, excessive perspiration, excessive liquid catharsis, or polyuria.

It may be artificially produced by the ingestion of salines.

In discussing the physiology of thirst there are two important factors to be borne constantly in mind: 1, the tendency of the blood-vessels to maintain a certain degree of tension, and 2, the tendency to maintain the normal specific gravity.

If fluid is withdrawn from the bloodvessels by hemorrhage or otherwise, they immediately attempt to regain it from the water of the surrounding tissues. Also, if by the introduction of salines the specific gravity is raised, the surrounding tissues are called upon to supply water necessary to reduce it to the normal.

But the factor which principally concerns us in *this* discussion is the tendency of the capillaries and smaller veins (which are the principal absorbents in the circulatory system) to restore their normal calibre by absorption when partially collapsed from any cause.

Now this withdrawal of fluid from the tissues of the body causes thirst. The sensation of thirst which is felt in the mouth and fauces is reflex, and has its origin, I believe, principally in the fibres of the sympathetic system of nerves which are distributed to the abdominal organs.

Flint[1] says: "Longet, speaking of hunger, says that dogs eat with satisfaction after the division of the pneumogastric, glossopharyngeal, and lingual nerves, and he (Longet) is also of the opinion that the sensation of hunger is conveyed to the brain through the sympathetic system."

Flint also says:[2] "The sympathetic system presides over nutrition; and hunger, which depends upon a deficiency of nutrition, is certainly not conveyed to the brain by any of the cerebro-spinal nerves."

Also, in speaking of thirst: "There are no nerves belonging to the cerebro-spinal system which have the office of carrying this sensation to the brain." Now hunger and thirst are kindred sensations, dependent on similar conditions. And it seems from these

[1] Human Physiology, vol. ii. p. 20.

[2] Ibid., pp. 21, 22.

quotations that they are considered sensations which arise from or are dependent for their origin upon a disturbance of the sympathetic system of nerves.

Of course, the fibres of this system are distributed to all parts of the body and preside over its nutrition; but they are distributed with especial prodigality to the organs contained in the abdominal cavity. This fact, together with the fact that thirst is almost *immediately* assuaged by the introduction of water into the stomach, before the bloodvessels and tissues of the entire body have had time to be replenished, leads me to the conclusion that the disturbance which causes the sensation of thirst has its origin principally in the sympathetic nerve supply of the abdominal organs.

This brings us naturally to the question, What are the factors present in every abdominal section, however simple, which cause this same disturbance of the tissues and give rise to this same sensation?

It is not due to the use of the anesthetic, nor is it dependent upon the length of time occupied. There may have been no hemorrhage nor any other agency by which fluid has been removed from the body. No other operation occupying an equal length of time and giving rise to an equally small amount of hemorrhage will cause such distressing thirst.

The cause must, therefore, be connected in some way with the incision of the peritoneum and the consequent intra-abdominal exposure and irritation.

Following every incision through the peritoneum there is an increased exudation of serum into the abdominal cavity. This comes from the abdominal vessels, and is largely replaced in the bloodvessels by absorption from the tissues of the abdominal organs; but it is often so slight in quantity that we can hardly credit it with being the only factor in the production of that thirst which may be so distressing. There must be some other factor connected, as I believe, with the nerve supply of the abdominal organs which is largely causative of this condition.

In every abdominal section where the peritoneum is incised, and the contents of the abdominal cavity exposed to the air, there is of necessity an element of irritation to the nerve supply of those organs. More especially is this true if to the simple exposure there is added intra-abdominal manipulation. Irritation of a certain set

of nerves is very apt to cause irritation of other fibres more or less directly connected with them. Especially does this seem to be true of the sympathetic system, whose history is rich in reflexes.

Irritation of sympathetic nerve-fibres causes contraction of the bloodvessels supplied by those fibres. There is also an impulse of irritation reflected to other sympathetic plexuses or fibres which may not be sufficient to cause perceptible general vasomotor disturbances, or it may be so severe as to cause profound shock.

In every abdominal operation there is the local irritation of certain sympathetic nerves by the violence done them. There is also a reflex irritation of other nerves having its origin in the nerves directly irritated. There is also a certain degree of direct irritation of the abdominal plexuses by the simple exposure to the air. From this it follows as a physiological necessity that there must be a certain amount of contraction of the bloodvessels supplied by those nerves. In other words, after every abdominal section the *arterioles* of the various abdominal viscera are contracted to a greater or less degree. This state of active *contraction* would be confined to the *arteries* and *arterioles* which have a perceptible muscular coat that responds to the impulse from the vasomotor fibres. The capillaries and veins supplied by such arterioles would be collapsed to a corresponding degree by reason of the diminution of the blood supply, a condition very similar to, if not identical with, that caused by direct withdrawal of blood from a vein. Now comes in the physiological fact that the capillaries and minute veins of the body tend to keep up a normal amount of tension, and if this is lessened in any way water is absorbed from the surrounding tissues to such an extent as may be necessary to restore the normal tension. This withdrawal of water from the tissues causes the sensation of thirst. This sensation continues after abdominal operations until the irritation of the nerves and consequent contraction of the arterioles yields and the normal blood supply is restored, or until, by the introduction of sufficient fluid, the *general* arterial tension is raised and the capillaries are normally distended.

It may be objected that the effect of the contraction of the arterioles would be neutralized, as far as the blood supply is concerned, by the increased velocity of the current; but practically we know that this is not always true, as has been proven by various experiments; for instance, contraction of the renal artery by stimulation

of its nerve-supply causes such diminution of the blood-supply to the kidney as to result in partial or even complete suppression of the urine. Again, "The intracapillary blood-pressure in a given area *increases* when the afferent small arteries *dilate*. . . . . A *diminution* of the capillary pressure is caused by the opposite conditions."[1]

That is, contraction of arterioles causes diminished intracapillary pressure.

Now, gentlemen, I am aware that I am offering to you a theory which has not the merit of actual demonstration, and therefore can be received only as a theory as yet unproven. But that you may clearly realize its claims to consideration, I shall briefly state those physiological facts which are universally accepted, or have been experimentally proven, on which the theory is based.

1. Thirst is a sensation indicating that the tissues of the system need more water.

2. The sensation felt in the throat is reflex.

3. The origin of the sensation is believed by leading physiologists to lie in the sympathetic system of nerves, because, (*a*) no cerebro-spinal nerves can be found which convey the sensation to the consciousness, and (*b*) nutrition is presided over by the sympathetic system, and thirst is a disturbance of nutrition.

4. (Hypothetical, or at least not proven.) The origin of the sensation is probably from the abdominal organs, because (*a*) these are so rich in sympathetic fibres, and (*b*) introduction of water into the stomach so instantaneously allays thirst.

5. The sensation invariably follows the withdrawal of any considerable amount of fluid from the body, and withdrawal of such fluid causes proportionate collapse of veins and capillaries.

6. Capillaries tend to remain at normal tension, and when suddenly collapsed in any degree attempt to regain that tension by taking water from the surrounding tissues.

7. Irritation of sympathetic nerves causes contraction of the arterioles supplied by such nerves.

8. Sudden contraction of the arterioles supplying any organ is followed by lessened tension in the capillaries and small veins in that organ.

[1] Landois & Stirling, Manual of Human Physiology, p. 174.

9. Abdominal section invariably causes direct and reflex irritation of the abdominal sympathetic nerves.

10. Such irritation causes contraction (in some degree) of the arterioles of the abdominal viscera, with consequent lessened tension in their capillaries and compensatory withdrawal of water from their tissues. And is it not probable that such circulatory disturbances give rise to the sensation of thirst?

DISCUSSION ON THE PAPERS OF DRS. FREDERICK STONE AND BOISE.

DR. EUGENE BOISE, of Grand Rapids.—Mr. President: As to the effect of ether as an anesthetic upon the kidneys and the secretion of urine, it does not seem yet to be thoroughly settled as to whether ether is responsible for the partial or complete suppression of urine which so often follows these cases. I have instituted some investigations in the hospital in Grand Rapids to see what effect it would have, the urine having been examined before and after operation, and nearly always there was a trace of albumin found in the urine following operation, and the odor of ether was perceptible in the bottle. I have inquired of other operators, and the opinions have been so diverse that I have been led to think it is problematical as to the influence of ether in producing those disturbances which we all deplore.

A friend of mine reported to me a case of railway injury in which the patient was so profoundly shocked as to permit of repair of the injury without an anesthetic, and yet there was complete suppression of urine for thirty-six hours; then it was gradually restored. Overbeck has demonstrated that ligation of the renal arteries for a while will cause suppression of urine. Again, cutting off the arterial supply to the kidneys will cause a proportionate suppression of urine, and if this lessened blood supply is extended for any length of time we will have changes in the kidney with all the evidences of acute nephritis. The urine will be found loaded with albumin. This has been demonstrated by experiments.

I recall a case I operated on a short time ago. It was for the replacement of a retro-displaced uterus. It was movable. I shortened the round ligaments, and when I drew the uterus up the right ovary was adherent in the cul-de-sac. It put the ovarian nerves and ligaments on a decided stretch, but immediately following the operation the urine became scanty, high colored, and was loaded with albumin

which persisted for two or three weeks in spite of energetic treatment. This I attributed to contraction of the renal arteries by a reflex disturbance of the renal plexus through the ovarian plexus of nerves, and I am convinced from my observations, reading, and study, that the trouble lies not so much in the anesthetic we use as in the nature of the operation. In nearly all abdominal or gynecological operations there is more or less disturbance of those nerves which control the vascular supply of the organs of the abdomen, and there is consequently a greater or less contraction of the renal artery. Continued contraction of the renal arteries causes a change in the epithelial lining of the tubules and leaves evidence of acute nephritis. The testimony of operators in general is that those operations most likely to be followed by kidney disturbances are operations done on the genito-urinary organs. I think it is still an open question as to the part that the anesthetic plays in the disturbance of the kidney.

DR. C. C. FREDERICK, of Buffalo.—As there has been very little discussion of the subject other than what Dr. Boise has given, with which I agree practically, I wish to say a few words about the medico-legal aspect of this question of anesthetics. A great many operators use ether, while others use chloroform. One man uses ether because he is afraid of chloroform, and if a patient should die from chloroform he is afraid the coroner will be after him. He will have a case of malpractice that will cause him a great deal of trouble. Now, each and every one of you know that some patients will take ether better than chloroform, and *vice versa*. Some patients will take a combination of both better than they will take either one alone, and I think the facts in the case warrant any operator in taking the position that it is not positively demonstrated whether ether or chloroform is the safest anesthetic; that it depends not upon either one alone, but upon the personal equation of the patient. That which would kill one patient might not kill another one, and I do not believe there ought to be any question in the minds of the medical profession upon the subject whether they shall give either ether or chloroform. Whichever one keeps up the capillary circulation and respiratian the best we should give, as manifested in the lips, finger-nails, conjunctiva, etc. The less cyanosis, the less heavy breathing, the more natural the pulse, are criteria to go by. Every anesthetizer ought to consider these points. If a patient dies, the coroner and popular opinion will be against him if he used chloroform. I think the medical profession should stand by him and sit down upon this attitude of the general public relative to accidents during anesthesia.

REPORT IN ABDOMINAL SURGERY,

Being an Analysis of One Hundred and Forty-five Cases Not Previously Reported, Done Upon the Ovaries and Uterine Appendages, with Special Remarks as to Preparation of Patient, Place of Operation, Use of Drainage, Treatment, and Results.

By A. VANDER VEER, M.D.,
ALBANY.

In presenting this report in abdominal surgery, with accompanying table, I desire to state that the one hundred and forty-five cases do not include any of my work in supravaginal hysterectomy excepting Nos. 112 and 114, cases complicated with ovarian tumors, or solid tumors of the ovaries or broad ligaments, cases of hystero-epilepsy, cases of tubercular peritonitis, of gall-bladder surgery, of appendicitis; or of any operations whatever within the peritoneal cavity, previously reported by myself in former papers, with one exception, Case 42. The operations here reported were done for removal of ovarian tumors and pathological conditions associated with the ovaries and uterine appendages. It is true that some of the cases were simple tubercular peritonitis, in which the appendages were not removed; but the history of the case, in each instance, and direct physical examination gave some little question as to whether there might not be an ovarian complication with the suspected tubercular trouble. It is my desire in making this analysis to present first the rate of mortality, and in doing this I realize that my work is far from being as successful as I could have wished, and yet, in a personal, critical retrospection of the causes of death, I feel that I have gathered an experience that will be to the benefit.

of my future patients, and I trust somewhat to those of my associates and successors who may continue to do this line of work.

In examining the table you will observe that there have been seventeen deaths. My criticism upon this mortality would be that these cases should be classified under two heads, avoidable and unavoidable deaths. In the former I would place Cases Nos. 10, 43, 66, 86, and 102.

CASE X.—Miss M. W. A simple, uncomplicated ovarian cyst; death on fourteenth day, with no serious symptoms presenting at any time, excepting a rapid pulse, for a period of nearly three days previous to death. Autopsy revealed pelvis containing a large number of clots, and the same condition of hemorrhage had extended up into the abdominal cavity, particularly in the right lumbar region, clots undergoing septic change, but no pus present, nor had there been any evidence of distention of the abdomen, or any condition to indicate true peritonitis. On careful examination of the pedicle the ligature had evidently loosened, and on tracing its history it was found to have come from a stock of silk imperfectly prepared, and of which I did not use any afterward. Could the hemorrhage have been discovered earlier, which would have been the result had a drainage-tube been made use of, the pedicle religated and cavity washed out, it might have saved her life.

CASE XLIII.—Miss J. S. Another case of uncomplicated ovarian cyst, the last case in which I made use of the Staffordshire knot. Patient did well for five hours after the operation, then internal hemorrhage presented; abdomen reopened, pedicle religated, free use of saline solution into the peritoneal cavity, drainage; and while she did well for a time, yet she died within twelve hours from the time of the operation from immediate hemorrhage.

CASE LXVI.—Mrs. M. K. A case of immediate hemorrhage from a broad pedicle; controlled at once. Patient gave evidence of internal hemorrhage at the end of five hours; pulse 140; was restless; abdomen reopened; everything found in good condition. Patient did well later on, but died unexpectedly, February 8, 1892, at 5 P.M., from pulmonary embolism of right lung, with a clot in right heart.

CASE LXXXVI.—Mrs. M. B. A case of early tapping, when the operation should have been done; complicated with pregnancy; and an early operation was eminently the thing for her.

CASE CII.—Mrs. J. C. D. Plainly a case of delayed operation for extra-uterine pregnancy, and illustrates the necessity of the surgeon not allowing the pleading of the patient to move him in the least in his line of action.

Of the unavoidable cases, 1, 80, 116, were cases of intestinal obstruction following adhesions of coils of small intestine to the stump of pedicle, producing obstruction.

CASE CXXIV—Mrs. M. S. This was a desperate case of multilocular ovarian cyst in a patient aged seventy-one years. Previously tapped, had recently suffered from grippe, and she really died from shock.

In some of my earlier exploratory operations I gained the impression that perhaps I ought to have been more thorough in the removal of diseased tubes, although I felt at the time it would be entirely at the risk of the patient dying on the table, or from shock. With a larger experience and fuller confidence, I have of late completed operations that were quite formidable, and in doing these have possibly added to my mortality list somewhat, but where death has resulted I do not see how it could have been avoided.

CASE XX.—Mrs. B. A., aged twenty-two years, grandfather died of phthisis; menstruated at sixteen, always had dysmenorrhea; never pregnant. Met with an injury May, 1888, and dates trouble from that time. October following abdomen began to enlarge. April 18, 1889, was tapped, and fifty pounds of fluid drawn. When in full health weighed one hundred and thirty-eight pounds. Menstruation previous to operation somewhat irregular; lost much in flesh, great loss of appetite; bowels regular, pulse 120, respiration 22, circumference at umbilicus about 44 inches. Though desperately ill, yet she and her friends were anxious to have an operation. Section, August 22, 1889; time required, one hour and thirteen minutes. Very extensive and firm adhesions of sac to peritoneum, requiring much time in controlling hemorhage, with thorough irrigation of abdominal cavity. Removal of multilocular cyst of left ovary. Right ovary somewhat enlarged, with evidence of another cyst developing; also removed. Glass drainage-tube. Shock very severe. Every effort made to bring patient out of this condition; hot saline injections into peritoneal cavity, etc., but she died in a condition of collapse 4 P.M., August 30th. Autopsy showed no hemorrhage within the peritoneal cavity; everything correct in that

direction. The case was probably a hopeless one from the beginning, and illustrates the seriousness of delay and the evil results of tapping.

CASE LXXIII.—Mrs. L. G., aged forty-two years, married, family history negative. Menstruation at thirteen; normal. One child, no miscarriages. July, 1891, suffered pain in region of right ovary. Severe attacks since, with continued vomiting. Two years after first attack abdomen began to enlarge, continued to increase in size, and measured forty-six inches around umbilicus. May 27, 1892. Constant thirst. Examination of urine showed specific gravity to be 1038, and a large quantity of sugar present. Notwithstanding this, I was induced to operate, and did a section May 29, 1892. Multilocular cyst from left ovary; glass drainage, removal second day. Up to this time patient gave no unfavorable symptoms. Secretion of urine had been abundant, specific gravity 1030, color unchanged, reaction acid, ethereal odor, no albumin, but large quantity of sugar present. Amount of urine passed on second day, twenty-four hours after operation, was fifty-six ounces, when secretion suddenly ceased, patient suddenly sank into a comatose condition, and died on the night of the third day after operation. Truly this was a case not suited to any operative interference, and should have been left alone or merely tapped.

CASE LXXXIX.—Mrs. D. S., aged thirty-four years, married, family history negative. Menstruated at thirteen; normal. Mother of three children, one living; five miscarriages. March, 1892, was very ill, and from the history of the case probably had pelvic peritonitis. Husband very dissipated, and treated for specific urethritis. After this illness she was able to get up and about, but not in full health, and in August, 1892, was taken ill with another similar attack, and from that time up to the date of operation was confined to her bed most of the time, much emaciated, suffering much pain in region of pelvis, very tender and sensitive over abdomen. I saw the patient first November 7, 1892, and advised her to come to the hospital for removal of the uterine appendages, believing the case to be one of double pyosalpinx having a specific origin, but she was dilatory in following out advice; growing constantly weaker, finally reached the hospital February 8, 1893. Requiring preliminary treatment, section was done February 11th. Tubes were found very much distended, filled with pus, and on the left

side large abscess. Sac attached to rectum, very serious adhesions, and operation long and tedious, but finally completed, cavity thoroughly flushed with hot saline solution, and left in nice, dry condition, all bleeding points having been controlled. No drainage. Patient reacted well from anesthetic, kidneys did their work well, very little vomiting, and symptoms seemed favorable, but she died in a condition of exhaustion on the third day.

CASE CXXIII.—Mrs. E. M., family history good. Patient usually in fairly good health, though suffering much from pelvic pains at different times, but able to get about until two months previous to operation, when she suffered from severe pelvic peritonitis, with undoubted salpingitis. On examination, diagnosis of double pyosalpinx, with adhesions. Patient emaciated and weakened. Celiotomy, December 15, 1893, at 11 A.M. Left ovary very adherent to surrounding structures, and liberated with great difficulty. Trendelenburg position, considerable hemorrhage. Right ovary very adherent, and great difficulty in releasing it. Appendages thoroughly removed. Bleeding points controlled, with one exception down on right side, where it seemed impossible to place a ligature. Long artery forceps placed and left in position. Cavity of abdomen thoroughly flushed with saline solution. Glass drainage and tampons of iodoform gauze inserted around tube and forceps. Operation eighty minutes. Took anesthetic very nicely, but none given for last half-hour of operation. Patient did not rally, and died from shock at 10.50 P.M., day of operation. Impossible to have lessened this operation in any way. It was either to abandon it in the beginning or to go on and complete, and the result proved that it was too much for her strength.

It will be observed the table contains a record of two cases dying from peritonitis, and as given below.

CASE XVI.—Miss I. R., aged twenty-six years. Family history only fairly good. Patient from time of menstruation, at thirteen, had always suffered from dysmenorrhea, and had had severe, well-marked attacks of pelvic peritonitis. When I saw her with her family physician she was very much emaciated and feeble, but with great effort continued her work, that of bookkeeper in a large store. Had had much trouble with her stomach, with vomiting and continuous indigestion. Operation seemed advisable, the case being evidently one of salpingitis, and probably double pyosalpinx. Celi-

otomy, April 5, 1889, revealing very many firm adhesions, difficult of separation, but removal of appendages completed. Hemorrhage well controlled, and pelvis left in a good, dry condition. Patient continued to vomit almost from the time of operation, at last a spinach-like substance. No distention of abdomen; bowels were moved safely, no symptoms of obstruction, but patient died from inanition on the eleventh day. Autopsy showed evidence of general peritonitis. Careful review of the technique of the operation and surroundings failed to show any evidence of error.

CASE LXXVII.—Mrs. H. C., aged forty years, widow, family history of phthisis. Menstruated at twelve; regular but painful, always more or less nauseated at this time, with vomiting. Married at thirty-six. Husband dissipated, and married life not a happy one. September, 1890, had her first attack of pelvic peritonitis, six months later another attack; three months after her first attack her physician noticed enlargement on the left side near broad ligament. Tumor gradually enlarged. December 11, 1891, patient suffered from chills and other evidences of suppuration, had trouble in urinating, great insomnia, and nervousness; difficulty in getting bowels to move. Patient continued much in this condition, at times improving sufficiently so that she could get about, and at one time came to my office, where, on examination, I had but to confirm her physician's diagnosis of double pyosalpinx with pelvic abscesses; origin probably specific. After much hesitancy the patient finally consented to an operation. An attempt had been made to reach the tubes through the vaginal wall by aspiration by another physician. Celiotomy, October 10, 1892. Double pyosalpinx; removal of uterine appendages very tedious, taking a long time. They were the largest, and abscess cavity the greatest, of any specimen I have ever removed. Glass drainage; the discharge being carefully examined by my assistant, gave evidence of gonococci present. Patient rallied well from the operation, and everything seemed to be going along safely up to the end of the fourth day, when she began to vomit, presented evidences of peritonitis, and died at the end of the sixth day.

CASE CXXXIV.—Mrs. H. A. L., aged forty-three years, married thirteen years, no children. Widow at time of operation. During her married life almost constantly under treatment, seeing many physicians for uterine trouble, had worn all manner of pessa-

ries, confined to her bed frequently for one year at a time, suffering much from severe leucorrheal trouble, at times from dysmenorrheal trouble, and in fact all the symptoms peculiar to pelvic disturbances. I saw her five years previous to operation in consultation with her family physician, found her suffering severely from retroversion, enlarged tubes, and every evidence of pyosalpinx. Advised an operation, but patient would not consent. She was of very nervous, fretful temperament. During the five years following this consultation she had a variety of treatment, but most of the time made use of tampons herself; would recover, get up for a month or two, but confined most of the time to her bed, suffering from great irritation of the bladder; frequently was constipated, and very careless in every respect in the care of her person; had little love for medical profession, and no kind word for any one. Finally, in February, 1894, she consented to have an operation, it requiring nearly a week's labor on the part of the nurse to get the surface of the body and the vagina in any kind of aseptic condition. She was absolutely rebellious to the taking of a bath and proper evacuation of her bowels. Made an effort to quarrel with the nurse, and on the morning of the operation furious because the nurse insisted upon giving her an additional scrubbing. Celiotomy, March 30, 1894. Diagnosis confirmed. Operation difficult, though adhesions gave little trouble in the way of hemorrhage. Patient recovered from the ether quickly, but was rebellious in every respect as to carrying out the line of treatment. Insisted upon sitting up in bed, objected to the use of bed-pan. Little disturbance from vomiting, not much tenderness over abdomen, but it was very difficult to keep the dressings on, she was so restless. Bowels moved at the end of second day thoroughly well. At this time noticed an abscess developing in left labia, which was opened and discharged pus very freely. Stitch-hole abscess in lower end of incision. At this time began to vomit, and this kept up more or less continuously. Wore out the patience and strength of two nurses, and at last we gave her a hypodermatic injection of morphia, learning then that she had been using it for a long time. The wound in every respect, aside from stitch-hole abscess, presented a healthy appearance, and healed quickly, but the patient died, evidently of septic peritonitis, April 5, 1894. No autopsy. I think I voice the sentiment of every operator when expressing the desire to be delivered from such a patient.

The last case on the list of mortality belongs to a class in which I have not had much personal experience, *i. e.*, puerperal pyosalpinx.

CASE XCIII.—Mrs. S., aged twenty-seven years. About two weeks previously she had been confined, accouchement being apparently normal in every respect. On the fourth day she developed chills and a high temperature, when her consulting physician deemed it advisable to do a thorough curetting of the uterus, bringing away some detritus, and patient improved, but relapsed again in a few days, when a second curetting was done. Believing then that the case was one of pyosalpinx I was called in consultation, telegram requesting me to come prepared to operate. Patient was having a temperature of 104° and upward, with very decided chills and severe perspiration. There was no abdominal distention, no evidence of general peritonitis, bowels moving and in good condition, but local tenderness over the pelvic region. Uterus well contracted. Celiotomy, April 19, 1893. Left tube and ovary found absolutely normal; right ovary enlarged, as well as tube, giving some evidence of septic condition, and removed. Patient recovered well from the operation, although there was a slight tendency to suppuration of one superficial stitch. Chills were not controlled. Everything had been done from a medical standpoint as to remedies, but patient gradually grew worse, developed casts in urine, and died on fourth day. Examination of the ovary did not reveal any marked septic suppuration. This case was probably one of true septicemia.

I am not unmindful that it would have been much more comforting to myself to have commenced this paper by reporting to you first my successful cases, cases that have brought to me much encouragement in my work, meeting patients in improved health, and receiving letters filled with gratitude and acknowledgment of recovery, but to most of these the table gives sufficient reference.

Regarding the preparation of patients, it seems to me quite difficult to establish a fixed line of action. I believe that, so far as possible, it is wise to carry out the preparations at home before the patient enters upon hospital life. It is true that there are some cases very calm, and not affected by the thought of entering the hospital, and yet there are many who are made somewhat nervous by being kept under observation too long away from home. I would like to emphasize somewhat the importance of regulating the bowels, and proper attention to such diet as does not constipate, previous to the

time of operation. I also wish to say that I place much stress upon the importance of a careful examination of the urine.

Now that we understand so well the evil effects of the bacillus coli communis, we should see that the intestinal tract is put in good sanitary condition. The previous habit of the patient as to the use of morphine or opium should be carefully observed, and is not a contra-indication to operation; but the same will necessarily be needed after, and I do not fear to give as full doses as may be required to control pain.

As to the preparation of the room, I have long since done away with the use of the carbolic spray, having had a tiresome experience in that direction, and rely upon thorough cleanliness, washing all woodwork, walls, and floors with the bichloride solution.

A large proportion of these cases reported were operated upon in the amphitheatre of the Albany Hospital, and some in the presence of one hundred and fifty or more students. As to the length of the incision, I can only say that my experience indorses all that Dr. Joseph Price has said in his admirable paper upon this subject. I have endeavored to make it as short as possible with safety.

As to the use of the drainage-tube, it may be said that I have used it with greater freedom than most of the operators at the present time. I must be excused somewhat by reason of the anxiety I have experienced in immediate hemorrhage in the two cases reported, and, therefore, have felt that the tube, wherever there was any possible fear of this occurring, or where the oozing was likely to be greater than the peritoneum could care for, was the safest procedure. I have employed it in thirty-nine cases, exclusive of the cases of tubercular peritonitis proper, and have not hesitated to leave it in as long as the gauze tent introduced through the calibre of the tube gave no disagreeable staining, removing it sometimes within six hours after the operation, and sometimes leaving it in from eight to ten days. Where left in this length of time have followed it with the rubber tube. I have invariably made use of the rubber dam, and then employed the gauze-packing instead of the syringe for removal of the accumulating fluid, and have found this procedure quite as comfortable to the patient, and to myself it has seemed better than the employment of the syringe. I may be mistaken, but I believe that this table of cases exhibits quite as many and as severe adhesions as present in the average run of ab-

dominal sections. Of the whole number, twelve cases gave a record of previous tappings, and only two or three had escaped adhesive inflammation.

Regarding the closure of the wound in the use of silk, however well prepared, I have had occasionally a stitch-hole abscess. For the past four years I have used silkworm-gut exclusively, and have very seldom met with this condition, as the table will show. I desire to emphasize here that I know of no kind of operative surgery that requires such careful apposition of wound surfaces, bringing like tissue in connection with like, as in the abdominal incision. I have not made use of the different rows of sutures, still I am not unmindful of the valuable arguments presented in favor of this procedure.

As to the time of removing the stitches, it is well if the superficial ones are removed at the end of the second day, or during the first dressing of the wound, and then the deep ones I believe it is wise to leave until about the tenth day. They do no harm, and certainly help to keep the abdominal incision in more perfect apposition.

In conditions of continued oozing from adhesions, and where the abdominal walls have been greatly stretched by size of the tumor, I must say that I have seen, in two of my cases, a most happy result from folding the abdominal wall over, having previously put in through-and-through sutures of silkworm-gut, taking them out at the end of forty-eight hours.

As to hernias resulting, as far as I have been able to learn, I know of but three cases, and in one instance this was plainly due to the carelessness of the patient in attempting too much heavy lifting within so short a time after the operation.

As to the dressing of the wound, I have uniformly employed the powdered iodoform, then the iodoform gauze, with the Gamgee pads and flannel bandage, doing the first dressing at the end of forty-eight hours, removing what is usually but soiled iodoform gauze, reapplying the second dressing, and letting it remain until the wound is healed, except in cases where the drainage-tube may have produced some soiling.

Out of this number of cases I can report only one where the Fallopian tubes were freed from adhesions, straightened—not removing the ovaries—and a good result followed.

It will be observed that my mortality list contains three cases in which a fatal intestinal obstruction was due to a coil of intestine becoming fastened to the stump of the pedicle. For the past two years, in such cases where the stump seemed to flatten out over the ligature, I have brought the peritoneal surfaces together with one, two, or three interrupted sutures of very fine silk, and comfort myself with the belief that it has perhaps had some effect in obviating this unfortunate post-operative complication.

The annoying cases I have found, and somewhat disastrous, are those brought to me by the family physician desiring an immediate operation that day or the next morning, in order that he might return home, but anxious to see the operation. These cases are fortunately growing less and less, as the members of the profession realize more and more the importance of preparatory treatment, and of the operator seeing the case long enough in advance to feel sure of his diagnosis and operative procedure. I wish to make an observation, and that is in reference to the serious cases that are likely to come from one particular practitioner, one who procrastinates and keeps the patient either by medication or tapping, under his treatment as long as possible, and then suggests operative interference when all chances are against the surgeon. My mortality list contains three of these cases from one practitioner. I do not wish to criticise, but would enter a plea that wherever an abdominal tumor presents in the practice of any physician, that it becomes almost his duty to call in the aid of a surgical assistant, that the line of treatment may be agreed upon as early as possible. In the study of these cases I have been impressed in one or two or three by the very marked history given by the patient of the tumor having appeared on one side, and yet when the operation was reached the pedicle and attachment were found on the other side.

As to the pulse and temperature, I am satisfied that the former is of far more importance than the taking of the latter. The heart's action plainly tells of serious trouble going on in the way of intestinal obstruction, or of either form of peritonitis. There are many conditions really non-essential as to the recovery of our patient that will cause an increase in temperature, apparently alarming. Any nerve-strain, a visit from a friend, the discharge of blood that occurs from the vagina after an operation and which appears in quite a number of cases, will sometimes prostrate the patient

mentally, in itself producing an increase of temperature, but is of no serious import as regards recovery.

In getting the histories of patients I have been much impressed with the number of cases having a family history of phthisis or malignancy. Thirty-nine cases of this table gave a distinct history of phthisis, fifteen of cancer in some form, while fifty-seven gave a history of marked irregularity of menstruation, with dysmenorrhea, many of them from the beginning of the menstrual act.

Making a closer analysis of the table there were thirty-nine cases of ovarian cyst, multilocular, with five deaths; twenty-five cases of ovarian cyst, unilocular, with two deaths; three cases of double ovarian cyst, multilocular, with one death; two cases of multilocular cyst complicated with pregnancy, with one death; two cases of double multilocular ovarian cyst complicated with fibroid tumors, with one death; there were twenty-seven cases of double pyosalpinx, with three deaths; twenty cases of pelvic peritonitis and salpingitis, with two deaths; four cases of pyosalpinx, unilateral, with one death; tubercular peritonitis, six cases; tubercular peritonitis, with removal of one or both ovaries, five cases; chronic ovaritis, six cases; extra-uterine pregnancy, three cases, with one death; exploratory incision, relieving adhesions and straightening tube, one case; one case double pyosalpinx and removal of appendix; removal of uterine appendages for uterine fibroid, one case, making a total mortality in 145 cases of 11 per cent.

Among the cases of recovery there are a few thoroughly instructive, to which I would like to refer for a moment.

Cases XXXV. and LIX. constitute the same patient. Miss L. McC., aged twenty-three years, in good health up to fourteen, when she had scarlet fever. Menstruated at thirteen, regular, painful, and troublesome; vomiting at this time. Met with an injury, and was treated for a long time for spinal trouble. Finally she was told that she had a retroverted uterus. Had treatment for this for a period of four months, then slipped on ice, receiving a severe fall and strain, and not well after. Vomited for four weeks, March, 1889, in Seney Hospital, Brooklyn, and Dr. Pilcher did Alexander's operation for relief of the retroversion. After that suffered more severe pain during her menstrual period, confined to her bed most of the time, and not able to walk. Flow presented with many clots. Entered Albany Hospital April, 1890, and uterus carefully

curetted after rapid dilatation, but no improvement followed. Complained of constant pain in region of right ovary. Patient no better; celiotomy done October 7, 1890. Right ovary enlarged, about size of a turkey's egg, tube much thickened, and removed with ovary. Left ovary and tube apparently in a healthy condition and not disturbed. Recovery uneventful, and discharged November 3, 1890. Operation did not afford permanent relief. Later, patient continued to suffer severely with pain in back and left inguinal region. Various kinds of treatment tried, tonics, out-door exercise, etc., yet continued to grow worse apparently, and on November 9, 1891, second celiotomy was done. Left ovary, size of a small orange, found undergoing cystic degeneration, tube also enlarged, and both removed. Patient reacted well from operation, much nauseated for several days, after which made an uninterrupted recovery. Discharged on twenty-ninth day, began to improve, and in excellent health September 1, 1894.

CASE XXXVIII.—Mrs. S. K. Family history good. Menstruated at twelve, always painful, flow at times dark and clotted, otherwise bright red-looking. For four years previous to operation had severe, brownish-looking, offensive discharge from vagina. Married over two years, no pregnancies. Steady pain in ovarian and across lumbar regions. Husband admitted having had specific urethritis. On examination, tubes could be well defined. Diagnosis of pyosalpinx, and operation recommended. Celiotomy October 30, 1890. Bilateral pyosalpinx with double parovarian cysts, and a small fibroid, size of an English walnut, discovered on fundus of uterus. Uterine appendages removed and then the fibroid. The latter carefully dissected from the fundus, but the bleeding was very severe, and controlled by the application of the thermo-cautery. Glass drainage-tube introduced. Drainage kept up quite freely for forty-eight hours, then a rubber tube substituted and kept in for another five days. On November 2d there was a copious sero-sanious discharge from vagina, not offensive. Bowels moved on third day with enema. About this time pulse reached 102, then became normal. Vaginal douches were made use of freely. Recovery uneventful. Discharged on eighteenth day. Eight weeks after the operation a small abscess formed in sinus left by the drainage-tube, through which escaped one of the ligatures.

CASE XLI.—Miss E. K., aged thirty-three years; health during

childhood not good. At eleven had trouble with abdominal enlargement, which she thought due to dropsy, Drs. March and Swinburne giving a very unfavorable report. Under treatment of local physician enlargement disappeared. Had multiple abscesses about left leg above ankle; finally operated upon by Dr. March and necrosed portions of bone removed. No further disturbance until 1886, when old cicatrices opened up partially. Dr. Morrow advised her to go to Albany Hospital, but advice not followed. First menstruated at seventeen; regular until three months previous to operation, when flow ceased. March, 1890, felt sudden, sharp pain in each groin, after lifting a heavy washing, followed by enlargement on both sides, corresponding to double femoral hernia, from which she then suffered. Abdomen now enlarged. In July, 1890, Dr. Townsend advised an operation for ovarian tumor. Patient did not follow advice, nor consult any one until December, 1890, when she came to me. Growth increased rapidly in the meantime. Enlargement began on right side. Celiotomy, January 30, 1891. Cyst connected with right ovary had ruptured. Multilocular cyst of left ovary, together with uterine appendages, also removed. Both cysts contained a viscid, glairy mass, some remaining behind having become agglutinated to intestine. Thorough irrigation; glass drainage-tube removed third day; bowels moved fourth day several times. Severe diarrhea developed, finally controlled. Tenth day lower angle of wound opened and discharged four to five ounces of fetid pus, after which the patient improved rapidly, made a good recovery, and was discharged April 29th, fistula almost healed.

Case XLIV.—Mrs. A. E. Family and personal history good. No pregnancies. Trouble began December, 1890, enlargement of right side near spine of ilium going on rapidly. Much emaciated. Abdomen much distended above umbilicus, dulness over part of epigastrium, whole of hypogastric region, both inguinal and lumbar regions. On percussion deep wave transmitted; palpation showed solid growth situated on left side. Stomach in good condition. Celiotomy, March 3, 1891. Cyst from left ovary papillomatous in character, containing three gallons of fluid; some adhesions. Connected with right ovary, and closely adherent to surrounding tissues, was another cyst. Tapped and emptied of viscid fluid, of a dirty-brownish color. In bottom of cyst was another papillomatous growth. Adhesions were such that it was impossible to remove

this entire; cyst walls were stitched to abdominal wound, and rubber drainage introduced. In pelvic cavity, on left side, a glass drainage-tube was placed. Patient recovered quickly, and was discharged much improved May 18, 1891. A slight sinus connected with the cyst on the right side still existed. Readmitted June 13, 1891, with a partial obstruction of bowels, which yielded, however, to calomel, salines, and enemas. Sinus closed, but wound showed tendency to open and mass could be felt connected with right side of pelvis. Occasionally suffered pain, and morphia required. Improved slowly, and was finally discharged August 12, 1891, having gained in flesh and strength. Was seen occasionally afterward, and January, 1892, was in very good health, free from pain, able to go on with her work, gaining greatly in flesh and strength. January, 1893, she had a return of the intestinal obstruction, and was readmitted to the hospital. Great distention of abdomen. Lower portion of old cicatrix incised, and immediate presentation of the old papillomatous growth filling right side of pelvis. In attempting to enucleate the mass the small intestine was opened into. Gauze packing was introduced, supposing that the patient could scarcely recover, but by continuous irrigation a great amount of detritus was washed out. Finally fecal fistula closed, patient had normal movements, gained in health, and returned to her work, but during the latter part of the winter of 1894 growth had increased, and in May she suffered from a fistulous opening connected with the sarcomatous growth, giving off an offensive discharge. Was losing in flesh and strength. Not heard from since.

Case XLIX.—Mrs. E. C., aged thirty-three years; family history good. Menstruated at twelve, not painful until eighteen, after that suffered from dysmenorrhea. At twenty had severe peritonitis following exposure to cold. Married at twenty-one, first child one year after; labor very difficult. Dysmenorrhea ceased after that. Since then has had dull, aching pain on both sides over ovarian regions. Three years before operation more marked on left side; menstrual flow scanty. In years previous to operation had much headache, considerable pyrosis, and constipated bowels. Treated in fall of 1890 for stricture of rectum and lacerated cervix; no improvement. Left side of pelvis filled with mass as large as a good-sized orange. Diagnosis of salpingitis; operation advised, and celiotomy done May 27, 1891. Both ovaries enlarged, cystic in

character; double pyosalpinx. Uterine appendages removed. Many firm adhesions. Glass drainage-tube; rubber substituted on third day. Serous discharge still quite free. Rubber drainage removed on seventh day. Some pain over abdomen, dragging pain in pelvis; otherwise recovery uninterrupted, and discharged on twenty-first day. This patient has gone on to a perfect condition of health, and September, 1894, has gained much in flesh and strength; able to get about with absolute comfort.

CASE LVIII.—Miss I. R., aged nineteen years. Diseases of childhood; typhoid fever at sixteen. Family history good. Menstruated at thirteen; menorrhagia and dysmenorrhea; confined to bed part of time during menstrual act. Always suffered from tenderness, particularly over left inguinal region, where pain is constant. Continual pain in back; confined to bed much of the time, and much disturbance of stomach. Diagnosis of chronic ovaritis with salpingitis, and operation advised.

Celiotomy, October 19, 1891. Left ovary very much atrophied, and removed with Fallopian tube. Right in a condition of cystic degeneration, also removed with tubes. Patient had some nausea and vomiting, with considerable pain in abdomen after operation, but soon recovered, and had an uneventful convalescence, returning home on the twentieth day. Three months after began to vomit, though having gained much in flesh and strength, which continued more or less until finally patient became much emaciated, and died with all the symptoms of cancer of the stomach one year after operation.

CASE LXIII.—Mrs. M. B. M., aged thirty-three years. Family history negative. In good health until birth of first child, November, 1888. Since then had severe attacks of pelvic peritonitis, and suffered constant pain, more or less severe. Under continuous treatment at her home, New York, and elsewhere. No permanent improvement. Patient lost in flesh, and grew very despondent. I saw her first with her family physician, Dr. Pond, of Rutland, Vt., December, 1891, and agreed with him fully as to the diagnosis—pelvic peritonitis with probable pyosalpinx.

Celiotomy, December 14, 1891. Tubes found very much enlarged, distinct hydrosalpinx on right side, ovaries in a condition of cystic degeneration, many adhesions, and a tedious operation. Glass drainage-tube. Good recovery; discharged thirty-second day. Re-

mained well, but in October and November, 1893, had discharge from vagina very much like her menstrual flow. This was repeated once during the winter of 1894, and just previous to the latter period Dr. Pond was able to make out a cystic enlargement connected with the right cornu of the uterus. Aside from this, patient in good health. I saw her in May, 1894; no return of discharge; uterus seemed to be atrophied somewhat, but in good position; otherwise pelvis presented normal condition.

CASE XCVI.—Mrs. E. P., aged fifty-five years. Family history of cancer. Three children; no miscarriages. In 1879 had ovarian cyst removed from left side by Dr. Thomas, of New York, and menstruation normal after that until menopause, which occurred just previous to second operation. No further trouble until 1880, when right side began to enlarge, gradually and she was very much distended. Diagnosis, multilocular ovarian cyst. Celiotomy, May 16, 1893. Multilocular cyst of right ovary. Uneventful recovery. Discharged on fifteenth day. Case of interest simply being second operation, second incision being made through the line of old cicatrix, which was found to be in a very good condition.

CASE CVII.—Miss E., aged twenty years. Menstruation fairly regular, but for two years previous to operation suffered much pain in left inguinal region; mental condition not at all good; irrational in talk at times, with a tendency to melancholia. Admitted to Albany Hospital, spring of 1893; found to be suffering from ischiorectal abscesses, with fistulous tract, also an opening into vagina discharging pus. Very severe case of vaginitis, requiring thorough operation, but at last patient made a good recovery, with the exception of sinus connected with vagina. Mental condition such that later it was thought best to do an oöphorectomy. Celiotomy, October 4, 1893. Left ovary diseased, double pyosalpinx; removal of uterine appendages. Patient made a good recovery, and some improvement in her general condition. Sinus healed in vagina wall left side.

CASE CXII.—Mrs. H. M., aged thirty-six years. Family history of cancer and tuberculosis. Menstruated at fourteen, regular. Married eleven years; four children, no miscarriages. Had when sixteen years old what was called bowel complaint, which confined her to bed for some time. In 1891 began to flow more than usual; told by a physician that she was pregnant, but passed period of con-

finement, then saw Dr. Rossman, of Ancram, N. Y., who told her that she had an ovarian tumor. Does not know on which side tumor was first observed. Tumor did not enlarge rapidly. October, 1892, by advice of Dr. Rossman she consulted me, and remained at the Albany Hospital for a short time. Distinct fluctuation could be made out in right side of abdomen, from pelvic region up. Owing to her feeble condition did not operate, but drew off about two quarts of fluid. This was repeated two or three times during the following year; patient gradually improved and grew stronger, though her flow continued irregular. Edema of lower extremities gradually disappeared. October, 1893, I advised an operation, as her condition seemed very much better, diagnosis being that of double ovarian cyst, possibly associated with a fibroid. Celiotomy, October 21, 1893. Double multilocular ovarian cyst removed in the usual manner, also fibroid size of cocoanut connected with fundus of uterus, interstitial. Uterine artery secured and broad ligament tied in sections. No clamp. Few adhesions. Bleeding thoroughly controlled, but drainage-tube was introduced; removed at end of six hours, packing not stained. Operation one hour and fifty minutes. Fourteenth day lower end of wound opened, and quite a portion of pedicle with two silk ligatures came away. Some discharge of pus for ten days. Sinus packed. Patient made recovery, and discharged on twenty-seventh day. Doing nicely March, 1894.

CASE CXIV.—Miss M. N., aged thirty-one years. Family history good. Menstruated at sixteen, never regular, sometimes flowing every seven or ten days. Spring of 1893 noticed growth in left side of abdomen. Diagnosis of multilocular ovarian cyst. Patient increased very rapidly in size previous to operation. Suffered pain in lower part of abdomen, frequent desire to micturate, and bowels constipated. Before entering hospital ankles were edematous. Celiotomy, October 30, 1893. Double ovarian cyst, multilocular. One contained about ten pints of fluid, the other not so much. Large fibroid of uterus; removed by supra-vaginal hysterectomy. Tait clamp. Patient made a good recovery, and discharged December 23, 1893.

CASE CXXVI.—Miss H. V., aged nineteen years. Family history good; always healthy, with exception of scarlet fever eight years previous to operation. Menstruated at eighteen; regular. First noticed enlargement in left side of abdomen August, 1893, accom-

panied with a good deal of aching pain. Tumor increased rapidly. Bowels regular. Loss in flesh quite decided. Celiotomy, January 2, 1894. Large multilocular cyst of left ovary, containing eleven quarts of fluid, thick, viscid, dark-colored. Firm adhesions from left side of abdomen and with some coils of small intestine. Right ovary in a condition of cystic enlargement, and removed with tube. Glass drainage removed second day. Recovery very rapid. Patient homesick, and allowed to return home on the tenth day. Returned May 15, 1894, with marked growth in left side of pelvis, probably of nature of sarcoma. Patient very much emaciated. No further operation advised.

A word as to the time of patient's returning home after an operation. I do not believe that it is always the greatest wisdom to hurry a patient home with encouragement to go on with her household and other duties, and particularly is this true in cases of removal of uterine appendages, for pyosalpinx and such like conditions. They must be made to understand that all their unpleasant symptoms will not disappear at once. It takes months for them to recover, and they are sometimes greatly disappointed in their hopes not being promptly realized.

I have but one case to report of keen anxiety in the loss of a foreign substance in the peritoneal cavity, and that is Case XXXII., Mrs. J. V., where a small sponge became entangled in mesentery of the small intestine and gave great trouble in the search for it. I am now exceedingly careful about having any very small sponges handed me.

I regret that more careful attention was not paid to the weight of tumors in the table, but part of the work was confided too much to advanced students and house surgeons, and not done thoroughly well.

Three cases give an interesting history of ligatures escaping through the sinus left by the drainage-tube, the ligature in one case being of coarser silk than ought to have been used. No ill effect followed, the sinus being closed as soon as the ligature was recovered. Possibly in one patient, Case XXXI., Mrs. E. H., it may have assisted in causing the hernia.

As to the after-treatment, I am most rigid in not allowing the patient the use of the hypodermic injection of morphia any more than is absolutely necessary, but prefer to give it where there is

restlessnes due to a weak heart's action, and where the pain is so great as to be intolerable.

For the treatment of persistent vomiting I have seen excellent results from the combined administration of cocaine, calomel, and oxalate of cerium, and then I can only indorse the use of calomel and salines for moving the bowels. A movement should be secured, if necessary by the aid of injections, as early as the second or third day, not later than the fourth day after the operation. As to diet, my patients have been greatly benefited by the carrying out of the hot-water treatment and the use of matzoon, particularly if the stomach is at all nauseated; also, for relief of thirst, rectal injections of hot water, slightly saline.

28 Eagle Street.

No.	Name, age, and civil condition.	Physician and residence.	Diagnosis of disease.	Date of operation.	Nature of operation. Removal.	Result.	Remarks.
1	Mrs. C. C. M. 52	Dr. Weidman, Medusa, N. Y.	Multilocular ovarian cyst.	Feb. 20 1888	Multilocular cyst right ovary. Papillomatous; many adhesions; short, broad pedicle.	D.	Patient died on fourth day from intestinal obstruction. Autopsy; obstruction due to loop of small intestine attaching itself to stump of pedicle.
2	Mrs. S. B. M. 37	Dr. Glidden, Little Falls, N.Y.	Unilocular ovarian cyst.	Feb. 24	Diagnosis confirmed; weight 20 lbs.	R.	Uninterrupted recovery.
3	Mrs. H. C. M. 68	Dr. Houston, Cohoes, N. Y.	Multilocular ovarian cyst; sarcoma of mesentery.	April 9	Multilocular cyst and uterine appendages; drainage.	R.	Patient in good health six months after operation.
4	Miss C. D. S. 24	Dr. Bush, Springfield, N. Y.	Double pyosalpinx, cystic degeneration of ovaries.	May 1	Uterine appendages.	R.	Stitch-hole abscess sixth day; finally good union and excellent recovery.
5	Mrs. L. W. M. 43	Dr. Wright, Canaan, N. Y.	Unilocular ovarian cyst.	May 15	Unilocular cyst right ovary.	R.	Uninterrupted recovery.
6	Mrs. A. M. M. 46	Dr. Hotaling, W. Township, N. Y.	Unilocular cyst left side.	May 31	Unilocular cyst left ovary, also right ovary; many adhesions; weight 35 lbs.	R.	Hypodermic injection morphia every six hours for twenty-four hours, then discontinued.
7	Mrs. A. O'C. M. 46	Dr. Grover, Port Henry, N. Y.	Multilocular ovarian cyst, left side.	May 31	Multilocular cyst left ovary, also right ovary; many adhesions to intestines and bladder; weight 20 lbs.	R.	Temperature rose on eighth day to 102°-104⅘°, returning to normal on twelfth day after tarry, fetid discharge from vagina; no suppuration.
8	Mrs. P. A. R. W. 55	Dr. Wheeler, Pittsfield, Mass.	Double multilocular ovarian cyst.	July 5	Diagnosis confirmed; some intestinal adhesions giving rise to considerable hemorrhage requiring several ligatures; weight 40 lbs.	R.	Uninterrupted recovery.
9	Miss E. B. S. 26	Dr. Montgomery, Luzerne, N. Y.	Many attacks pelvic peritonitis; salpingitis.	Oct. 1	Uterine appendages; operation difficult.	R.	Good recovery. Two years later patient died from what at time supposed to be sarcoma of cavity of pelvis.
10	Miss M. W. S. 20	Dr. Melick, Fort Edward, N. Y.	Multilocular ovarian cyst, left side.	Oct. 4	Diagnosis confirmed.	D.	Death on fourteenth day from general peritonitis. Autopsy revealed evidence of pelvic hemorrhage probably caused by ligature becoming loosened in some way.
11	Mrs. C. W. M. 34	Dr. Noble, Cairo, N. Y.	Multilocular ovarian cyst.	Nov. 19	Multilocular cyst left ovary; right healthy; drainage not removed for 48 hours.	R.	Uninterrupted recovery.
12	Mrs. H. T. S. M. 37	Dr. Johnson, Belleayre, N Y.	Multilocular ovarian cyst.	Dec. 21	Diagnosis confirmed, 12 quarts fluid.	R.	Uninterrupted recovery. Patient in good health June, 1894.
13	Mrs. H. M.R. M. 29	Dr. Reiley, Fair Haven, Vt	Salpingitis.	Dec. 22	Uterine appendages.	R.	Good recovery. Patient had metrorrhagia for six months after operation; finally, complete recovery.
14	Mrs. E. B. M. 39	Dr. Vander Veer, Albany, N. Y.	Pelvic or psoas abscess.	Jan. 4, 1889	Pyosalpinx; one ovary and tube; drainage.	R.	Drainage continued for over two weeks.

15	Mrs. N. M. M. 26	Dr. Lape, Fair Haven, Vt.	Tubercular peritonitis.	Jan. 5	Right ovary and tube; drainage.	R.	Mass removed proved on examination to be tubercular. Glass drainage gave much discomfort, and on fourth day replaced by rubber tube; this removed on twelfth day.
16	Miss I. R. S. 26	Dr. Du Bois, Albany, N. Y.	Salpingitis; pelvic peritonitis.	April 5	Uterine appendages.	D.	Death from peritonitis on eleventh day. Possibly obstruction.
17	Mrs. M. E. H. M. 45	Dr. Wheeler, Chatham, N. Y.	Multilocular ovarian cyst.	April 13	Cyst and ovaries.	R.	Uninterrupted recovery.
18	Mrs. E. C. M. 26	.....	Multilocular cyst left ovary.	May 21	Diagnosis confirmed; right ovary in state of cystic degeneration and removed; drainage.	R.	Uninterrupted recovery.
19	Mrs. F. W. M. 49	Dr. Van Vranen, W. Troy, N. Y.	Unilocular cyst left ovary.	June 15	Multilocular cyst left ovary; drainage.	R.	Good recovery, but patient suffered from hernia six months after operation.
20	Mrs. B. A. M. 22	Dr. Maxon. Chatham, N. Y.	Unilocular ovarian cyst.	Aug. 29	Unilocular cyst left ovary, also right ovary; very adherent.	D.	Death from shock.
21	Mrs. E. B. M. 47	Dr. Fuller, Huntsville, N.Y.	Multilocular cyst left ovary.	Sept. 23	Cyst and uterine appendages; colloid degeneration; drainage.	R.	Uninterrupted recovery.
22	Mrs. C. L. M. 63	Dr. A. Boyce, E.Schodack, N.Y.	Multilocular ovarian cyst.	Oct. 14	Diagnosis confirmed; many adhesions; drainage.	R.	Severe vomiting for forty-eight hours after operation. Drainage quite free. Excellent recovery.
23	Mrs. C. C. M. 59	Dr. Johnson, Champion, N. Y.	Unilocular cyst right ovary.	Oct. 15	Diagnosis confirmed.	R.	Uninterrupted recovery.
24	Mrs. M. B. M. 47	Dr. Layman, Middleburg, N Y.	Unilocular cyst left ovary.	Oct. 29	Diagnosis confirmed.	R.	Uninterrupted recovery.
25	Mrs. R. H. M. 36	Dr. Babbitt, Cooperstown, N. Y.	Pelvic peritonitis; salpingitis.	Nov. 4	Adhesions loosened, but too severe for removal of appendages.	R.	Good recovery. Patient very much improved in health one year after operation.
26	Mrs. R. A. M. 35	Dr. Best, Middleburg, N.Y.	Unilocular cyst left ovary.	Nov. 11	Unilocular cyst left ovary, also right ovary.	R.	Uneventful recovery.
27	Mrs. D. S. M. 37	Dr. Allen, Greenbush, N.Y.	Supposed large ovarian cyst.	Nov. 13	Incision; right ovary removed; tubercular peritonitis.	R.	Error in diagnosis. Patient died later on of return of peritoneal dropsy.
28	Mrs. S. N. M. 32	Dr. St. J. Middle, Brunswyck, N.Y.	Large unilocular cyst right ovary.	Dec. 5	Unilocular cyst right ovary, also left ovary.	R.	Chill on fourth day controlled by quinine. Uninterrupted recovery followed.
29	Mrs. H. N. M. 34	Dr. Hall, W. Hartford, N.Y.	Chronic ovaritis; pelvic peritonitis.	Jan. 27, 1890	Uterine appendages.	R.	Uneventful recovery.
30	Mrs. A. McK. M. 20	Dr. Turner, Mineville, N.Y.	Chronic ovaritis.	Feb. 23	Uterine appendages; cystic degeneration of ovaries; many adhesions.	R.	Good recovery.
31	Mrs. E. H. M. 55	Dr. Dunlop, Waterford, N. Y.	Multilocular cyst left ovary.	April 20	Diagnosis confirmed; hard mass on right side not disturbed.	R.	Good recovery. Hernia observed one year after operation, not troublesome. Hard mass still observed two years and six months after operation, not enlarging. Ligature came away July, 1890.
32	Mrs. J. V. M. 30	Dr. Traver, Troy, N. Y.	Multilocular cyst left ovary.	April 30	Diagnosis confirmed; drainage removed on seventh day.	R.	Excellent recovery, although long search had to be made for sponge lost in cavity.
33	Miss A. O. S. 30	Dr. Pearson, Schenectady, N.Y.	Chronic ovaritis; dysmenorrhea.	June 16	Uterine appendages.	R.	Uninterrupted recovery.

No.	Name, age, and civil condition.	Physician and residence.	Diagnosis of disease.	Date of operation.	Nature of operation. Removal.	Result.	Remarks.
34	Mrs. E. C. M. 34	Dr. Gray, New York.	Unilocular ovarian cyst.	Sept. 20 1890	Multilocular cyst right ovary; parovarian cyst left side.	R.	Uneventful recovery.
35	Miss L. McC. S. 23	Dr. Young, Glenville, N. Y.	Chronic salpingitis; left ovary cystic; retroversion.	Oct. 7	Right ovary and tube, March, 1889; had been to Seney Hospital, N.Y., and Alexander's operation done by Dr. Pilcher	R.	Recovery uninterrupted.
36	Miss M. G. S. 18	N. Easton, N. Y.	Multilocular cyst right ovary.	Oct. 10	Diagnosis confirmed; left ovary healthy, not removed.	R.	Good recovery. Apposition lower angle, wound not perfect, silkworm-gut. Exuberant granulations.
37	Mrs. F. W. M. 24	.....	Chronic salpingitis; pelvic peritonitis.	Oct. 21	Right ovary and tube; left healthy.	R.	
38	Mrs. S. K. M. 33	Dr. Bissell, Troy, N. Y.	Pyosalpinx double.	Oct. 30	Uterine appendages and small fibroid fundus of uterus; drainage.	R.	Free hemorrhage from fundus uterus when fibroid removed, controlled by thermocautery. Ligature came away eight weeks after operation. Recovery uneventful.
39	Mrs. F. M. M 35	Dr. Matte, N. Adams, Mass.	Ovaritis salpingitis.	Nov. 29	Uterine appendages.	R.	Patient made a slow but good recovery.
40	Mrs. J. E. M. 26	Dr. Kathan, Schenectady, N.Y.	Ovaritis right side.	Dec. 18	Right ovary size turkey egg, and tube.	R.	Quick recovery. Two years after, patient became pregnant; passed through successfully; delivered of living child. Excellent health since.
41	Miss E. K. S. 33	Dr. Vander Veer, Albany, N. Y.	Unilocular ovarian cyst, probably left.	Jan. 3, 1891	Unilocular cyst left ovary and uterine appendages; drainage.	R.	Tenth day lower end incision opened and from four to five ounces of fetid pus discharged. Irrigation track of drainage-tube. Good recovery.
42	Miss M. G. S. 20	Valley Falls, N.Y.	Tubercular peritonitis; left ovary enlarged.	Jan. 14	Left ovary and tube; drainage	R.	Good recovery. Patient in excellent health June, 1894.
43	Miss J. S. S. 19	Dr. Vander Veer, Seward, N. Y.	Unilocular cyst left ovary.	Feb. 28	Diagnosis confirmed; right ovary, cyst, and incised.	D.	Immediate hemorrhage due to slipping of ligature, abdomen reopened, pedicle re-ligated. Two pints saline solution poured into peritoneal cavity.
44	Mrs. A. E. M. 20	Albany, N. Y.	Multilocular ovarian tumor.	Mar. 3	Mass from left side, sarcoma; cyst from right ovary; drainage.	R.	Patient did well. Able to do her work for more than a year. Second operation; removal part of new growth. Living June, 1894, with fistulous tract from which protruded sarcomatous mass.
45	Mrs. N. A. M. 30	Dr. Stickles, Philmont, N. Y.	Hematosalpinx.	Mar. 18	Uterine appendages; right side extra uterine pregnancy.	R.	Patient had regular menstrual flow for more than a year, then thoroughly curetted cavity; uterus packed with iodoform gauze when flow ceased and she has remained well since.
46	Mrs. M. S. M. 44	Dr. Rulison, Amsterdam, N. Y.	Multilocular ovarian cyst.	April 23	Multilocular cyst, left ovary; right ovary undisturbed.	R.	Ligature came away nearly six months after operation; sinus readily healed. In good health August, 1894.
47	Mrs. E. C. M. 33	Dr. Babcock, Albany, N. Y.	Chronic ovaritis.	May 4	Uterine appendages; extensive adhesions; drainage.	R.	Good recovery. Hernia one year after operation.

48	Mrs. A. McC. M. 32	Dr. Webster, Schuylersville, N. Y.	Chronic ovaritis and pyosalpinx; specific.	May 22	Uterine appendages.	R.	Good recovery from operation, but complained for over two years of old feeling; weakness about pelvis and pain in back.
49	Mrs. E C. M. 33	Dr. Neher, Nassau, N. Y.	Chronic ovaritis and pyosalpinx.	May 27	Uterine appendages; drainage	R.	Good recovery. Patient had undergone operation for lacerated cervix three months previously. Excellent health, August, 1894.
50	Mrs. E. B. M. 28	Dr. McHarg, Albany, N. Y.	Multilocular ovarian cyst.	May 30	Multilocular cyst and both ovaries; drainage.	R.	Excellent recovery.
51	Miss L. M. S. 26	Dr. Church, Oneonta, N. Y.	Cystic degeneration ovaries and salpingitis.	July 13	Uterine appendages.	R.	Good recovery, somewhat slow. In excellent health August, 1894.
52	Mrs. A. E. B. M. 42	Dr. Bigelow, Albany, N. Y.	Multilocular ovarian cyst; peritonitis.	Sept. 1	Multilocular cyst, left ovary and right ovary; cyst suppurating; drainage.	R.	Excellent recovery and in good health June, 1894.
53	Mrs. M. M. M. 32	Dr. Felter, Troy, N. Y.	Unilocular cyst left ovary.	Oct. 1	Left ovary, also hydrosalpinx, right side.	R.	Good recovery. Patient in good health one year afterward.
54	Mrs. V. S. M. 53	Dr. Nicholas, Worcester, N. Y.	Ovarian cyst right side.	Oct. 6	Unilocular cyst, right ovary; 6 quarts fluid.	R.	Excellent recovery and in good health two years after operation.
55	Mrs. A. B. M 55	Dr. Mambert, Rondout, N. Y.	Multilocular ovarian cyst.	Oct. 6	Suppurating cyst and both ovaries; drainage.	R.	Excellent recovery.
56	Mrs. N. P. M. 31	Dr. Lamont, Catskill, N. Y.	Supposed suppurating ovary right side.	Oct. 8	Incision; great adhesions of intestines; large abscess; drainage.	R.	One year after operation developed second abscess, producing septicemia, from which she died.
57	Mrs. E. J. L. M. 30	Dr. Magee, Lansingburg, N. Y.	Unilocular ovarian cyst with peritonitis.	Oct. 15	Cyst and both ovaries.	R.	Good recovery. In excellent health two years after operation.
58	Miss I. R. S. 19	Dr. Salmon, Lansingburg, N. Y.	Chronic ovaritis; dysmenorrhea.	Oct. 19	Uterine appendages; atrophy of both ovaries.	R.	Very good recovery, but died one year after from cancer in stomach, vomiting almost continually for three months previous to death.
59	Miss L. L. McC. S. 24	E. Glenville, N. Y.	Cyst of left ovary.	Nov. 9	Cyst left ovary like small orange.	R.	Second operation (see Case 35). Patient in excellent health August, 1894.
60	Miss K. E. M. S. 23	Dr. Bigelow, Albany, N. Y.	Unilocular ovarian cyst.	Nov. 24	Unilocular cyst left ovary: right ovary cystic and removed.	R.	Excellent recovery.
61	Mrs. M. J. V. M. 40	Dr. Gray, Cambridge, N. Y.	Unilocular ovarian cyst.	Dec. 7	Unilocular cyst, left ovary.	R.	Excellent recovery.
62	Mrs. L. McK.	Dr. Vander Veer, Albany, N. Y.	Cystic degeneration ovaries; pelvic peritonitis; salpingitis.	Dec. 7	Uterine appendages.	R.	Excellent recovery.
63	Mrs. M. B. M. M. 33	Dr Pond, Proctor, Vt.	Pelvic peritonitis; hydrosalpinx.	Dec. 14	Uterine appendages; many adhesions; atrophy both ovaries; drainage.	R.	Excellent recovery. Patient relieved promptly from all sufferings. November and December, 1893, quite a flow each month. Excellent health since; last seen May, 1894.
64	Mrs. F. E. D. M. 27	Dr. Sheffield, Masonville, N. Y.	Pyosalpinx.	Jan. 2, 1892	Uterine appendages; tubes large and filled with pus; drainage.	R.	Excellent recovery.
65	Mrs. D. B. M. 30	Dr. Edwards, Gloversville, N. Y.	Unilocular ovarian cyst, possibly tubercular peritonitis.	Jan. 26	Right tube and ovary; tubercular peritonitis; drainage.	R.	Good recovery.

No.	Name, age, and civil condition.	Physician and residence.	Diagnosis of disease.	Date of operation.	Nature of operation. Removal.	Result.	Remarks.
66	Mrs. M. K. M. 27	Dr. Simons, Conajoharie, N.Y.	Unilocular ovarian cyst.	Feb. 2, 1892	Unilocular cyst left ovary; also right ovary; dermoid; drainage.	D.	Broad pedicle. Immediate hemorrhage from retraction vessels before abdominal incision closed. Vessels tied separately. At end 48 hours, from condition, pulse, symptoms—possible internal hemorrhage. Wound reopened; only 1 ounce of blood in pelvic cavity; drainage. Death sixth day from exhaustion.
67	Mrs. I. H. M. 59	Dr. Infield, Sandy Hill, N.Y.	Multilocular ovarian cyst.	Feb. 12	Cyst right ovary; slight adhesions.	R.	Good recovery. In excellent health May, 1894.
68	Mrs. M. A. D. M. 25	Dr. Still, Johnstown, N.Y.	Salpingitis; hystero-epilepsy.	March 5	Uterine appendages.	R.	Menstruated nearly every month since operation. Better for some time of epileptic seizures, but September, 1894, quite as bad as ever.
69	Mrs. F. S. M. 35	Dr. Gray, Greenwich, N.Y.	Tubercular peritonitis.	March 9	Uterine appendages; drainage	R.	Patient in excellent health May, 1894.
70	Miss B. C. S. 16	Dr. Holdridge, Niskayuna, N.Y.	Tubercular peritonitis.	April 8	Uterine appendages; drainage.	R.	Patient died three months after operation; from all symptoms general tuberculosis.
71	Mrs. A. B. M. 32	Dr. Millbank, Greenbush, N.Y.	Tubercular peritonitis.	May 2	Incision, cocaine; ovaries studded with tubercles, also peritoneum; drainage.	R.	Patient in excellent health May, 1894
72	Mrs A. H. M. 28	Dr. Nichols, Sand Lake, N.Y.	Ovarian cyst, peritonitis.	May 26	Cyst right ovary; numerous adhesions; ligated; drainage.	R.	Good recovery. Patient in good health one year after operation.
73	Mrs. L. G. M. 42	Dr. Papen, Albany, N. Y.	Multilocular ovarian cyst.	May 29	Cyst of right ovary and tube; many adhesions; hydrosalpinx; left tube and ovary removed; drainage second day.	D.	Suffered from diabetes for two years. At time of operation passed urine containing nine grains sugar to the ounce. Died comatose third day.
74	Mrs. I. L. M. 35	Dr. Haynes, Cohoes, N. Y.	Unilocular ovarian cyst.	June 15	Cyst left side; right ovary healthy; two gals. fluid; drainage.	R.	Excellent recovery and in good health June, 1894.
75	Mrs. M. D. M. 48	Dr. Hannan.	Ovarian cyst.	Aug. 30	Diagnosis confirmed.	R.	Uninterrupted recovery.
76	Mrs. L. C. B. M. 71	Dr. Wilson, Schodack, N. Y.	Multilocular ovarian cyst.	Sept. 30	Cyst right ovary; left ovary not disturbed; some adhesions; 8 qts. fluid; drainage.	R.	Good recovery. Patient alive June, 1894.
77	Mrs. H. G. M. 40	Dr. Geel, Berlin, N. Y.	Double pyosalpinx, specific.	Oct. 10	Uterine appendages; very tedious operation; many adhesions; drainage.	D.	Death on sixth day from exhaustion.
78	Mrs. M. A. A. M. 27	Dr. Knapp, Forest City, Pa.	Double pyosalpinx and tubercular peritonitis.	Oct. 14	Uterine appendages; drainage.	R.	Good recovery. Patient writes, May, 1893, seldom had such good health as then enjoying.
79	Miss A. A. S. 39	Dr. Kellog, Plattsburg, N.Y.	Double pyosalpinx, cirrhotic ovaries.	Oct. 30	Diagnosis confirmed; uterine appendages.	R.	Good recovery. Much improved in health December, 1893.
80	Miss E. W, S. 24	Dr. Scully, Rome, N. Y.	Multilocular ovarian cyst, peritonitis.	Nov. 1	Cyst right ovary; some adhesions.	D.	Death on fifth day, due to intestinal obstruction.

81	Miss E. W. S. 16	Dr. Taylor, Bainbridge, N.Y.	Multilocular ovarian cyst.	Nov. 3	Diagnosis confirmed.	R.	Recovery on about sixteenth day.
82	Miss C. L. L. S. 40	Drs. Kinskern and Stover, Amsterdam, N.Y.	Double pyosalpinx.	Nov. 29	Diagnosis confirmed; uterine appendages.	R.	Excellent recovery.
83	Mrs. K. O. M. 37	Dr. Johnson,	Unilocular ovarian cyst.	Dec. 1	Diagnosis confirmed.	R.	Good recovery.
84	Mrs. E. G. M. 37	Dr. Carty, N. Granville, N. Y.	Ovarian cyst and pyosalpinx.	Jan. 16, 1893	Cyst and uterine appendages.	R.	Excellent recovery.
85	Miss F. W. S. 19	Dr. Lough, Edmeston, N. Y.	Unilocular cyst right ovary.	Jan. 18	Diagnosis confirmed; left ovary healthy; not disturbed	R.	Excellent recovery. In good health September, 1894.
86	Mrs. M. B. M. 40	Dr. Papen, Albany, N. Y.	Multilocular ovarian cyst and suspected pregnancy.	Jan. 18	Multilocular cyst right ovary; pregnancy 4 months; 27 pints fluid.	D.	Patient's history very interesting. Tapped twice. Aborted forty-eight hours after operation. Death from exhaustion on fifth day.
87	Mrs. F. K. M. 30	Dr. Phillips, Gloversville, N.Y.	Cyst left ovary.	Jan. 23	Unilocular cyst each ovary; 9 pints fluid.	R.	Excellent recovery. Good health June, 1894.
88	Mrs. A. W.K. M. 57	Dr. Gorham, Albany, N. Y.	Multilocular ovarian cyst; recent peritonitis.	Feb. 2	Cyst right ovary; left ovary and tube normal; slight adhesions; 25 pints fluid; drainage	R.	Excellent recovery. In good health September, 1894. Looks ten years younger than before operation.
89	Mrs. D. S. M. 34	Dr. Brownell, Oneonta, N. Y.	Double pyosalpinx; probably specific; several attacks pelvic periton.	Feb. 11	Uterine appendages; very serious adhesions.	D.	Operation long and tedious. Death from exhaustion on third day.
90	Mrs. E. D. M. 23	Dr. Brownell, Oneonta. N. Y.	Double pyosalpinx.	Feb. 13	Uterine appendages.	R.	Good recovery, though at times suffered from pelvic pain, and had some flow for few months following operation.
91	Mrs. A. W. M. 24	Dr. Hall, Adamsville, N.Y.	Left ovary diseased; dysmenorrhea, etc.	Feb. 16	Uterine appendages; left ovary prolapsed and developing cyst; right cirrhotic stenosis of tube.	R.	Good recovery. In excellent health, June, 1894.
92	Mrs. K. W. M. 25	Dr. Magee, Lansingburg, N. Y.	Pelvic peritonitis; pyosalpinx double.	Mar. 18	Uterine appendages; cystic degeneration of ovaries; firm adhesions.	R.	Not a rapid recovery, but ultimately improved and presents the best appearance of health, June, 1894.
93	Mrs S. M. 27	Drs. Lincoln and Hodgman, Wilton, N. Y.	Pyosalpinx, puerperal.	April 19	Right ovary.	D.	Operation following confinement twelve days previously. Septic condition; uterus curetted twice; chills, etc., not controlled. Death fourth day.
94	Miss J. K. S. 15	Dr. Ross, Whiting, Vt.	Tubercular peritonitis.	May 2	Incision; drainage.	R.	Excellent recovery.
95	Mrs. P. D. M. 40	Dr. Johnson, Ashland, N. Y.	Ovarian cyst.	May 4	Unilocular cyst left ovary.	R.	Uninterrupted recovery.
96	Mrs. E. P. M. 50	Dr. Fritts, Hudson, N. Y.	Cyst right ovary.	May 16	Unilocular cyst right ovary.	R.	Quick recovery. Second operation; Dr. T. G. Thomas removed cyst, left ovary, 1879.
97	Mrs. I. P.	Dr. Rider, Buskirk's Bridge, N. Y.	Multilocular ovarian cyst; peritonitis; possible suppuration and pregnancy.	July 24	Multilocular cyst right ovary; slight adhesions scant; three months pregnant.	R.	Good recovery followed by normal confinement at full time. In excellent health June, 1894.
98	Mrs. M. F. M. 32	Drs. Archambeault and Morrow, Cohoes, N. Y.	Tubercular peritonitis.	Sept. 7	Diagnosis confirmed; drainage.	R.	Good recovery. In excellent health six months later.

No.	Name, age, and civil condition.	Physician and residence.	Diagnosis of disease.	Date of operation.	Nature of operation. Removal.	Result.	Remarks.
99	Miss M. S. S. 38	.....	Unilocular cyst right ovary.	Sept. 8 1893	Diag. confirmed; pyosalpinx; left tube removed with ovary.	R.	Excellent recovery.
100	Mrs. E G. D. M. 27	Dr. Pond, Rutland, Vt.	Extra-uterine pregnancy, right side.	Sept. 17	Extra-uterine pregnancy right side, with tube and ovary; pyosalpinx, left ovary and tube removed: drainage.	R.	Rapid recovery.
101	Mrs. E. W. M. 29	Dr. Stover, Albany, N. Y.	Double pyosalpinx, probably specific.	Sept. 21	Uterine appendages.	R.	Good recovery. Patient doing well June, 1894.
102	Mrs. J. C. D. M. 28	Drs. Keegan and Hennesy, Albany, N. Y.	Extra-uterine pregnancy.	Sept. 21	Four months fœtus and placenta; many clots right side.	D.	Death from shock in twelve hours.
103	Miss G. T. S. 18	Dr. Smith, Poultney, Vt.	Tubercular peritonitis.	Sept. 22	Uterine appendages; ovaries and tubes studded with tubercular masses; tubes thickened; drainage.	R.	Excellent recovery.
104	Mrs. M. V. W. 52	Dr. Easton Van, Hornersville, N.Y.	Multilocular cyst right ovary.	Sept. 23	Diagnosis confirmed; some adhesions; left ovary healthy; not removed; 7 quarts fluid.	R.	Splendid recovery.
105	Mrs. E. E. M. 54	Dr. Ullman, Albany, N. Y.	Multilocular cyst right ovary; peritonitis.	Sept. 25	Diagnosis confirmed; firm adhesions one spot; left ovary normal, not disturbed; 10 quarts fluid.	R.	Excellent recovery. In good health August, 1894.
106	Mrs. I. A. M. 27	Dr. Riley, Adams, N. Y.	Multilocular ovarian cyst.	Sept. 28	Multilocular cyst left ovary, also right ovary and tube; 14 quarts fluid.	R.	Rapid and excellent recovery.
107	Miss E. S. 20	Dr. Gray, Greenwich, N.Y.	Ovarian abscess; pyosalpinx double.	Oct. 4	Uterine appendages.	R.	Good recovery; fairly encouraging result. Private hospital.
108	Mrs. M. S. M. 27	Dr. Kniskern, Amsterdam, N.Y.	Double pyosalpinx.	Oct. 7	Uterine appendages; tubes very much thickened and filled with pus; drainage.	R.	Good recovery. Patient obliged to go to work at once. September, 1894, presented with threatened hernia.
109	Miss M. R. S. 60	Dr. Bigelow, Albany, N. Y.	Multilocular cyst right ovary.	Oct. 12	Diagnosis confirmed; no adhesions; left ovary senile, not disturbed.	R.	Excellent recovery.
110	Mrs. J. M. M. 40	Dr. Mead, Jerusalem, N. Y.	Double pyosalpinx; abscess	Oct. 12	Uterine appendages.	R.	Slow but gradual recovery. Patient very neurasthenic.
111	Mrs. L. de L. M. 45	Dr. Willard, Watertown, N.Y.	Diseased left ovary; very painful; double pyosalpinx.	Oct. 15	Diagnosis confirmed; uterine appendages.	R.	Recovery retarded. September, 1894, relieved of all pelvic pain, but still confined to bed more or less.
112	Mrs. H. M. M. 36	Dr. Rossman, Aurcam, N. Y.	Double ovarian cyst and uterine fibroid.	Oct. 21	Diagnosis confirmed; supravaginal hysterectomy; ligatures; drainage.	R.	Excellent recovery.

113	Mrs. J. F. M. 37	.....	Cyst left ovary.	Oct. 21	Large cyst right ovary, also left ovary for cystic degeneration.	R.	Good recovery.
114	Miss M. N. S. 31	Dr. Van der Veer, Troy, N. Y.	Multilocular ovarian cyst.	Oct. 30	Double multilocular ovarian cyst; uterine fibroid supravaginal hysterectomy; Tait clamp; 5 quarts fluid.	R.	Good recovery.
115	Mrs. N. C. P. M. 23	Dr. Wheeler, Chatham, N. Y.	Probably sarcoma left broad ligament.	Nov. 2	Multilocular cyst left ovary; right ovary cirrhotic and removed with tube.	R.	Good recovery. In good health June, 1894.
116	Mrs. S. H. M. 26	Dr. Niver, Hillsdale, N. Y.	Double pyosalpinx.	Nov. 2	Diagnosis confirmed; uterine appendages.	D.	Patient did nicely; wound healed: began to sit up on twenty-first day; twenty-second day symptoms of obstruction presented. Unable to relieve, and died on twenty-seventh day.
117	Mrs. R. C. M. 46	Dr. H. H. Smith, Hudson, N. Y.	Tubercular peritonitis.	Nov. 2	Incision, drainage; diagnosis confirmed; 12 quarts liquid.	R.	Good recovery.
118	Mrs. E. McC. M. 34	Dr. Reynolds, Saratoga, N. Y.	Pelvic peritonitis; dysmenorrhea.	Nov. 16	Uterine appendages; firm adhesions.	R.	Excellent recovery.
119	Miss K. S. 30	Dr. Chambers, Kingston, N. Y.	Old general and pelvic peritonitis; dysmenorrheal hystero-epilepsy.	Nov. 29	Right ovary and tube like intestine; many and very firm adhesions; left ovary and tube could not be found.	R.	Good recovery. Patient very much better until May, 1894, when severe convulsive seizures, flowing coming on two months in succession at this time.
120	Mrs. H. W. M. 28	Dr. Knapp, Forest City, Pa.	Pelvic peritonitis.	Nov. 30	Uterine appendages; cystic degeneration ovaries; firm adhesions.	R.	Good recovery. In excellent health eight months later.
121	Miss E. L. H. S. 32	Dr. Vander Veer, Troy, N. Y.	Unilocular ovarian cyst.	Dec. 7	Multilocular cyst left ovary; right ovary for atrophy; 10 quarts fluid; cyst 15 ounces	R.	Excellent recovery.
122	Miss S. S. 28	Dr. Cook, Albany, N. Y.	Double pyosalpinx; uterine fibroid.	Dec. 7	Diagnosis confirmed; uterine appendages.	R.	Excellent recovery. Patient in good health June, 1894.
123	Mrs. E. M. C. M. 27	Dr. Ross, Poultney, Vt.	Pelvic peritonitis; double pyosalpinx.	Dec. 15	Uterine appendages; very firm adhesions.	D.	Death from shock.
124	Mrs. M. S. M. 71	Dr. Van Slyke, Coxsackie, N. Y.	Multilocular ovarian cyst.	Dec. 18	Multilocular cyst right ovary; 16 quarts fluid, cyst 3 lbs.	D.	Patient recently suffered from grippe. Death from pulmonary infarction.
125	Mrs. P. S. M. 27	Dr. Crosby, E. Nassau, N. Y.	Unilocular ovarian cyst.	Dec. 21	Unilocular cyst right ovary; also left ovary cystic enlargement.	R.	Good recovery.
126	Miss H. V. S. 19	Dr. Papen, Oneonta, N. Y.	Multilocular ovarian cyst; acute peritonitis.	Jan. 2, 1894	Cystic papillomatous mult cyst left ovary; right ovary cystic; firm adhesions; drainage; removed second day 11 quarts fluid.	R.	Patient made good recovery. Returned in August with marked growth left side pelvis, probable nature true sarcoma. No further operation done.
127	Mrs. E. F. S. M. 42	Dr. Sabin, W. Troy, N. Y	Pelvic peritonitis; double pyosalpinx.	Feb. 22	Uterine appendages; many and firm adhesions; drainage.	R.	Good recovery.
128	Miss J. D. S. 26	Dr. Johnston, Amsterdam, N. Y.	Supposed disease of ovaries, causing sympathetic vomiting.	Feb. 23	Section ovaries and tubes, healthy; not removed; some adhesions loosened and tubes straightened.	R.	Slow but excellent recovery.

No.	Name, age, and civil condition.	Physician and residence.	Diagnosis of disease.	Date of operation.	Nature of operation. Removal.	Result.	Remarks.
129	Miss A. E. S. 28	Dr. Millington, Argyle, N. Y.	Pelvic peritonitis; dysmenorrhea.	Feb. 24 1894	Uterine appendages; many adhesions.	R.	Excellent recovery.
130	Miss M. D. S 22	Drs. Stover and Kniskern, Amsterdam, N.Y.	Pelvic peritonitis and enlarged ovaries.	Feb. 27	Uterine appendages; cystic enlargement both ovaries.	R.	Good recovery.
131	Mrs. N. J. O. M. 23	Drs. Babcock and Pomeroy, Springfield, N.Y.	Diagnosis doubtful as to nature of cyst.	March 1	Multilocular cyst left ovary; right ovary enlarged with pyosalpinx; many adhesions.	R.	Good recovery. Patient on returning home had much pain, relapsing into former morphine habit.
132	Miss S. N. S. 29	Dr. McCulloch, Gloversville, N.Y.	Pelvic peritonitis; chronic disease left ovary; severe dysmenorrhea.	Mar. 19	Uterine appendages; many adhesions.	R.	Excellent recovery.
133	Mrs. L. D. M. 29	Dr. Johnson, Amsterdam, N.Y.	Double pyosalpinx.	Mar. 23	Uterine appendages.	R.	Excellent recovery.
134	Miss J. McC. S. 27	Dr. Mosher, Granville, N. Y.	Double pyosalpinx.	Mar. 30	Uterine appendages; many adhesions.	R.	Excellent recovery.
135	Mrs. H. A. L. W. 43	Dr. Nichols, Sand Lake, N.Y.	Pelvic peritonitis; retroversion; diseased ovaries.	Mar. 30	Uterine appendages; many very firm adhesions.	D.	Death from peritonitis. Patient very stubborn and hard to manage.
136	Miss J. K. S. 33	Dr. Lee, Canaan, Conn.	Hystero-epilepsy; chronic ovaritis.	April 16	Uterine appendages; not difficult.	R.	Speedy recovery. At end of third month no return of epileptic seizures.
137	Mrs. M. S. M. 25	Dr. Shaw, Hoosick Falls, N.Y.	Double pyosalpinx; enlarged ovaries.	April 17	Uterine appendages; many adhesions; 7 quarts fluid.	R.	Excellent recovery.
138	Miss L. S. S. 31	Dr. Garnsey, Kinderhook, N.Y.	Double pyosalpinx; enlarged ovaries; possibly tubercular appendicitis	April 28	Uterine appendages and appendix; few adhesions.	R.	Excellent recovery.
139	Mrs. F. F. M. 36	Dr. Melick, Sandy Hill, N.Y.	Double pyosalpinx; pelvic peritonitis.	April 30	Uterine appendages; few adhesions	R.	Good result. Patient improved very markedly three months after operation.
140	Mrs. E. V. M. 30	Dr. Starks, Chatham, N. Y.	Small interstitial fibroid uterus; dysmenorrhea.	May 12	Uterine appendages.	R.	Good recovery. No return of flow. August 24, 1894, patient improved very decidedly.
141	Miss E. M. K. S. 34	Dr. Seymour, Troy, N. Y.	Ovarian cyst.	May 24	Double ovarian dermoid cysts; few adhesions.	R.	Splendid recovery.
142	Mrs. L. D. M. 30	Dr. Faust, Schenectady, N.Y.	Double pyosalpinx; chronic peritonitis.	May 29	Uterine appendages.	R.	Excellent recovery.
143	Mrs. A. G. W. M. 29	Drs. Reed and Church, Oneonta, N. Y.	Double pyosalpinx.	May 30	Uterine appendages.	R.	Good recovery. Patient doing finely when leaving private hospital.
144	Miss M. C. F. S. 27	Dr. Henan, Albany, N. Y.	Unilocular ovarian cyst.	June 6	Unilocular cyst left ovary.	R.	Excellent result. Patient had improved in health September 10, 1894, looking very much better.
145	Mrs. A. McN. M. 40	Dr. Bissell, Troy, N. Y.	Unilocular ovarian cyst.	June 16	Unilocular cyst left ovary; short, broad pedicle; hemorrhage.	R.	First ligature slipped requiring three additional ones. Pedicle then brought up and attached to lower end incision. Second week portion sloughed, pedicle came away. Some phlebitis of left leg; otherwise excellent recovery.

DISCUSSION.

DR. L. H. DUNNING, of Indianapolis.—Mr. President: I wish to say a few words in connection with Dr. Vander Veer's paper, and first with regard to those cases in which he had obstruction of the bowels in consequence of adhesion of the intestine to the stump of the pedicle. I am reminded of a case which occurred in my practice in which I had fatal obstruction of the bowels, due to a coil of small intestine becoming attached to the stump of the pedicle. I puzzled my mind after that as to what means I should employ to cover up the stump, and for a time I employed the method proposed by the essayist, but in four or five cases recently I have adopted another plan. (Here Dr. Dunning drew a sketch and demonstrated his method on the blackboard.) This plan is based upon the fact that the nutrient arteries of the Fallopian tubes and ovaries are very small, but can be easily seized and tied. The method is not applicable to large tumors having vascular pedicles, but smaller tumors and to cases of pyosalpinx, small ovarian abscesses, etc. It consists in cutting off the tube at the uterine cornu, holding the severed end in the hand, and with knife and scissors severing the attachment of the mesocolon from the tube close to the inferior surface of the latter. The ovary is freed in a similar manner, and the ovarian ligament severed near the ovary or the uterine cornu. One or two small arteries will spurt, and need to be tied with catgut. A continuous catgut suture should now be used to unite the edges of the cut surface. By this method we are able to avoid the *en masse* ligature of the stump, and are able to turn in all raw surfaces. It is not applicable to cases in which there is great vascularity of uterine appendages. If there should be hemorrhage not easily controlled, I should ligate the ovarian artery in the upper part of the broad ligament near the uterine cornu.

DR. LEWIS S. MCMURTRY, of Louisville, Ky.—It is very seldom that a paper is presented from the standpoint of the one which has just been read. It is a well-known fact that the lessons to be derived from fatal cases are the most impressive and instructive that we can possibly have; and it is also as well known that such cases are seldom reported fully and candidly. The paper presents such a wide field for discussion that it is impossible to do it justice in the brief time at my command. If we were to attempt to take up the various points brought out by this excellent contribution, we would find ourselves discussing every important feature of pelvic surgery, excepting those

that relate to supra-vaginal hysterectomy and the treatment of uterine fibro-myomata, which the essayist announced were entirely excluded from his paper.

I was impressed with the fact that there was hardly any allusion made to post-operative sepsis, there being only two cases among the large number reported. I believe the facts will bear me out when I say that, except in the work of those who are operating constantly—who have a complete organization for operating, and are thoroughly versed in the technique of abdominal and pelvic surgery—deaths from sepsis are common. They are much more common than we are inclined to believe. Deaths occur which are attributed to renal insufficiency, to the effect of the anesthetic on the kidneys, and to exhaustion. We know, also, that what is really septic peritonitis is very often reported after the fatal issue occurs as intestinal obstruction following operation. Septic infection is a very potent factor in the mortality of abdominal surgery, even at the present day. It ought to be entirely eliminated. I take occasion to allude to it here simply because a perfect operative technique will entirely exclude septic infection. That should be the standard to work by.

I was impressed with the very small number of fistulæ that occurred after operation in such a large group of cases, showing that the operative work was done with judgment and skill. Fistulæ do occur after operations, even with careful and thoroughgoing operators. They are not to be attributed universally to the operator's lack of skill, but in many instances difficulties are presented by the class of cases referred to this morning—pus in the pelvis, where the intestinal walls are injured—and fecal fistulæ occur. Fistulæ from infected ligatures are very common. Mural abscesses are due to unclean suture material; sometimes to tying the sutures too tightly. Cases of post-operative hemorrhage after ovariotomy are very interesting. This is not at all an uncommon accident; and I will say here that there is one important reason why abdominal operations of election should always be done as early as possible in the morning. If there is danger of post-operative hemorrhage, it is apt to occur during the first twelve or sixteen hours. If we operate early in the morning, say at nine o'clock, we have sixteen hours before reasonable bedtime in which we can be called upon and keep track of the patient. If operations are done late in the afternoon, and hemorrhage comes on in the night, we are less apt to see the patient promptly. That is one of the important reasons for selecting the morning hours for performing operations of election.

The loss of patients by hemorrhage after ovariotomy and other

operations on the uterine appendages has occurred far more frequently than any records of abdominal work will show. I have found, in talking with different operators, that nearly every one has lost some patients from this cause. I believe that a large number of deaths after abdominal section, particularly ovariotomy, attributed to shock and so-called secondary shock, are cases of secondary hemorrhage.

In regard to reopening the abdomen, inquiry into this will show, in a large proportion of cases, that when the abdomen is reopened the patients die. The reopening of the abdomen is sometimes done upon insufficient data. It is nearly always done under great strain. It is an emergency operation, whereas the primary operation is one of election. It is done oftentimes with insufficient arrangements, and is incomplete. If it is decided to reopen the abdomen, necessary preparations should be made for it. The patient should be lifted upon a table where there is good light, the proper instruments at hand, and every care taken to make the operation as thorough as the initial one. It is a difficult point in some cases to decide when to reopen the abdomen. I have known the abdomen reopened when it ought not to have been done. With the pulse running up the situation is critical. What is to be done is to be done quickly. If you reopen the abdomen, you may do great damage; if you do not reopen it, you may lose the patient. I do not know of any emergency that requires such nice discrimination as in dealing with the question of reopening the abdomen for hemorrhage. It is sometimes done when no hemorrhage is found. Right here I will digress a moment to say that here is where the drainage-tube comes in; it is of great assistance in determining that point. In a certain class of neurotic women the running up of the pulse is not a trustworthy guide for reopening the abdomen. In many women of neurotic temperament the pulse may reach 120 or 130, and keep on going quickly with rapid breathing. This is a semi-hysterical condition that will obtain in many patients after the operation has been performed. I have made it a rule, in every case in which I had to reopen the abdomen, to study the pulse and respiration carefully and deliberately, then walk around the hospital, return, and observe again before deciding the question. I reopened in one case with a gradually ascending pulse, quick respiration: both pedicles were dry and clean. It was a neurotic condition which might obtain in any woman of that particular type after operation. The patient made a perfect recovery.

I must disagree with the author in regard to his management of the drainage-tube. If you will insert a glass drainage-tube and observe

at the end of twenty-four hours what has been removed by suction, all of which the peritoneum is relieved of, and carefully note the easy progress to convalescence, you will be convinced that it is better than gauze drainage.

Dr. George F. Hulbert, of St. Louis.—I desire to call attention to one point in the excellent paper of Dr. Vander Veer, and that is in regard to the preparation of the patient before the operation and the administration of cathartics. If I understood the author correctly, he made the statement that as a routine practice he was in the habit of giving a cathartic on the second day after operation. My experience has not been so extensive, probably, as some of the gentlemen in the room, but my practice has been in preparing a patient for operation thoroughly to unload the intestinal canal as well as the lymphatics. I want to be sure that my patient is not afflicted with lymphostasis, and to accomplish this it usually takes two or three days. In the process of this preparation we should confine our patients as near as possible to a liquid diet.

I cannot accept the philosophy that insists upon having the bowels of a patient moved simply because she may feel a little more comfortable. There are many patients on the second day after operation that are not in a condition to take a cathartic or medicine. They may be suffering pain, and there may be a tendency to vomiting; and hence it is really a punishment to endeavor to give salines to effect an evacuation of the bowels. My experience has been that where a preliminary preparation is made, where we do it systematically and endeavor to accomplish definite results—and these results are usually manifested by the pulse being soft and compressible—we do not need to bother patients about the movements of their bowels in the absence of special indications inside of from six to seven days. As a rule, I do not give a cathartic after abdominal sections until the sixth or seventh day.

Dr. A. H. Cordier, of Kansas City.—I wish to lay special stress on what Dr. McMurtry has said in regard to the drainage-tube and the manner of taking care of it. The more I use a drainage-tube the more I am in love with it. He says, in the use of gauze drainage, we must of necessity use larger tubes than when using a syringe to empty it with. By using a syringe to empty it with it is not necessary to use one larger than a lead-pencil. Where the gauze drain is used, even admitting there is alarming hemorrhage going on within the peritoneal cavity, it will throw up the watery-looking fluid, and the clotted blood will remain in the bottom of the pelvis, and the hemorrhage will go on. By the aspirating piston-syringe you can keep the bottom of the

pelvis dry. You not only remove the fluid in the pelvis, but frequently the large clots, and all débris will be sucked out in the process of emptying.

In regard to puerperal cases, I have operated on three. Instead of stopping with removal of the appendages, I should remove the uterus also in similar cases, admitting that there was sapremia. I am rather inclined to believe that the author's case was not one of sapremia, but a true case of progressive sepsis, and even admitting the uterus was removed in this particular case, the patient would have died. In a few cases I have traced the elevation of temperature to the presence of this fluid in the vagina, and after irrigating the vagina with a 1-4000 bichloride solution the temperature has gone down, and the patient's condition has improved.

With reference to foreign bodies, I wish to call attention to the fact that we frequently operate with a plain ring on the finger, and I have had my attention called to the fact that an operator lost his ring in the peritoneal cavity, and some one else removed it. The ring may be perfectly tight on the finger in the beginning of the operation, but as soon as your hands are put in warm water the finger shrinks, and in the midst of the operation the ring may slip off your finger and into the peritoneal cavity. Sponges I have abandoned altogether, and am now using large pledgets or pads of gauze boiled along with the instruments, which will absorb fluid as readily and quickly as sponges. You can make them thoroughly aseptic by the boiling process.

Dr. James F. W. Ross, of Toronto.—I will mention three points in the form of don'ts. Don't use a tube with holes. Don't put a gauze drain in a tube. Don't use the Staffordshire knot.

Dr. J. Henry Carstens, of Detroit.—Instead of using silk, which is not absorbed and easily infected, use kangaroo tendon or catgut, and you will not have as much trouble.

Dr. Vander Veer.—I would say in reply to Dr. McMurtry's criticism with reference to the use of gauze, that the size of the tube I usually employ is not larger than my little finger. By carrying the gauze down with a probe that is kept in a boric acid solution, pressing it down to the bottom of the tube, I think our patients suffer less than from the suction of a syringe used in the hands of a great many operators or myself, in which the patients cry out with pain. Some portion of the tissues in the bottom are sucked up with the syringe.

One word in regard to moving the bowels by administering calomel. I must say I feel easier to have the bowels moved at the end of forty-eight hours, and not later than the fourth day.

NEPHRECTOMY.

Report of Four Cases; Remarks on Indications for the Operation.

By L. H. DUNNING, M.D.,
INDIANAPOLIS.

Any effort to describe the method of nephrectomy today would be a work of supererogation. There has been little change in methods in the last ten years, though there has been great improvement in the execution of details, in the method of diagnosis, and in the consensus of opinion among surgeons leading to earlier operations. To these must be attributed the marked decrease in the mortality of the operation during the last few years. Every surgeon deprecates the necessity of extirpating an organ so essential to the life of the human body as are the kidneys. There is no more commendable or humanitarian work being done today than that of those engaged in earnest endeavor to devise or perfect means by which vital or important organs may be retained in the human body to perform their functions normally, and thus minister to the health, comfort, strength, and longevity of the individual. It is a source of great satisfaction to me that since the first nephrectomy I did eight years ago the necessity for such a procedure has very nearly passed away. In the future the instances will be very rare, indeed, in which it will be necessary to extirpate a movable kidney, and it now seems to me that just as surely as that a successful method of nephrorrhaphy has been worked out, the methods of overcoming valve formations and strictures of the ureter will in a very few years be perfected so that nephrectomy for pyonephrosis and hydronephrosis will be seldom indicated. It is because of this fact and this belief, together with the thoughts they suggest, that I discuss indications for operation with each case reported.

CASE I.—Mrs. A., aged forty-three years, had two-and-one-half years previously undergone an operation for fixation of the kidney. The operation was seemingly successful the first three months, then the kidney became movable, and the patient suffered more than previous to the operation. She had much nausea and vomiting, and periodical attacks of intense pain. She was much emaciated in consequence of the persistent vomiting and frequent attacks of pain. She was confined to the bed the greater part of the time. The kidney was removed February 22, 1887, by the lumbar method, without difficulty, and the patient made a rapid and satisfactory recovery. The amount of urine secreted the first twenty-four hours was nineteen ounces; second twenty-four hours, twenty-eight ounces; third, forty-four ounces; fourth, thirty-six ounces. From this time on the quantity was slightly below normal, and the specific gravity was sufficiently great to indicate that the solid particles eliminated were fully up to normal. We thought then, and still think, we found a sufficient cause for the increased severity of the symptoms after the kidney was anchored and became again movable. It was in the scar-tissue resulting from the operation. When the kidney was exposed for its removal it was found surrounded by the fatty envelope that had the appearance of the normal perirenal adipose tissue, but on close inspection there were found pinkish-white bands of fibrous scar-tissue running through it in all directions, beginning in that part of the perinephritic fatty tissue nearest the kidney. In fact, upon the posterior and the outer surface of the kidney the renal capsule and the fatty capsule were so intimately blended that one could not be separated from the other. The bands of cicatricial tissue radiating through the fatty tissue extended to the under surface of the kidney and to the colon, and it was thought to the duodenum, but this was not demonstrated.

The kidney removed was found to be in a normal condition, except upon the posterior surface near the external border there was found cicatricial tissue limited to an area one inch in length, one-fourth an inch in width, and one-fourth an inch in depth. This scar-tissue resulted from passing one suture through the cortical substance of the kidney to the depth of one-quarter of an inch in the former operation. For three months subsequent to the nephrectomy the vomiting was almost absent, when it reappeared and persisted for several months, resisting all forms of treatment. Finally after two

years the vomiting disappeared spontaneously, and the woman has since been in comparative good health. She has from the date of the nephrectomy been entirely free from pain in the renal region. Under the present methods of anchoring a movable kidney there are but few failures; hence it will seldom be found necessary to extirpate the organ in a painful, movable kidney. When it must be done the lumbar method should be employed, and the oblique incision, I believe, will be the most satisfactory one. The vertical one was employed in this instance, and it was found necessary to make a second incision parallel with and just below the border of the twelfth rib.

CASE II.—Hydronephrosis of several months' duration, diagnosticated ovarian tumor. Tumor removed by abdominal section. Recovery of patient. The hydronephrosis due to impermeable stricture of the ureter one and one-half inches long.

Mrs. K., aged about fifty-five years, was referred to me by Dr. Drake, of Shelbyville, Ind. The tumor, which had been first discovered five or six months previously, had been steadily growing, until at the time of my observation it occupied the space between the crest of the ilium and the short ribs upon the right side. The inner border reached the median line. It had but a limited range of motion, which I attributed to adhesions. My belief was that the patient had had a moderate degree of peritonitis, causing adhesion of the ovarian cyst wall to the parietal peritoneum. A few months previously to this I had removed an ovarian tumor so similar in size, location, and other features, that I did not give due weight to the information the physical signs yielded me; for instance, there was resonance over a limited portion of the superior anterior surface of the tumor. Furthermore, I could not ascertain from the patient the fact that the tumor grew from above downward, and there were no symptoms pointing to disease of kidney or bladder. The operation was done January 30, 1893, at my private hospital. A central abdominal incision was made. The tumor was found retro-peritoneal. I determined to remove the tumor, even though the hydronephrosis were due to an impacted stone in the urethra. It was tapped, and two quarts of dark-colored fluid withdrawn. The perinephritic tissue was quite firmly adherent. The ureter was not seen. The renal vessels were tied and cut between the ligature and tumor, and the tumor enucleated. The cortical portion of the kidney was

thin, and formed one-quarter to one-eighth of the cyst wall. The remainder of the cyst wall was the dilated pelvis of the kidney and upper portion of the ureter. Upon examination of the mass removed we found remnants of the ureter hanging by the cyst wall. It was cord-like, and one and one-half inches long and entirely impervious. This would account for the persistence and steady, though slow, growth of the tumor. No stitches were taken in the posterior layer of the peritoneum. The abdominal incision was closed in the usual manner and drainage employed. The recovery of the patient was rapid, nothing occurring to interrupt it. The cause of the stricture in the case was not determined. No stone was found, and no disease of the kidney. The cortical portion was simply atrophied by pressure. The woman was fifty-five years of age, and had enjoyed good health until one year previously. The stricture of the ureter was probably acquired by inflammation or ulceration. Such inflammation has been ascribed to the passage of a jagged stone from the pelvis of the kidney through the ureter into the bladder, and to injuries, such as falls, blows, or kicks. Pye Smith's[1] case, which is generally conceded to be one of stricture, was gradually forming two years after the receipt of the injury. In our case there was no history of an injury to the abdomen.

In twenty-four of the Middlesex Hospital cases recorded by Morris, not due to cancer of the pelvic organs, there are three of stricture of the ureter. In thirty-two cases reported by Roberts there were five of stricture or obliteration of the ureter near its origin or termination, produced presumably by some preceding inflammation or ulceration. Fortunately, in our case our error in diagnosis did not jeopardize the life of the patient. The pathological condition found demonstrated that nephrectomy should have been done. Had hydronephrosis been diagnosticated aspiration might have been done, but it would have been followed by a rapid recurrence of the tumor. Extirpation of the kidney must have been resorted to finally.

This case was operated upon before the appearance of the report of Fenger's[2] cases, which has revealed to us heretofore unknown possibilities in treating stricture of the ureter at its origin. One

[1] Morris's Disease of the Kidney, pp. 296, 297.
[2] Journal of the American Medical Association, March 10, 1894, pp. 335, 342.

who studies Fenger's cases carefully must be convinced that he has shown us a new procedure that will enable us to avoid the removal of the kidney in many cases of valve formations and stricture of the ureter. It is not my purpose to describe the operation in detail, a simple outline may be given. The case was one of intermittent pyonephrosis. The kidney was exposed by a lumbar incision. The pelvis and the calices were explored by the finger and sound through an opening into the pelvis made by a thermo-cautery through the convex border of the kidney. No stone was found; the kidney was lifted up partly out of the lumbar incision. An incision was made through the posterior wall of the pelvis of the kidney. The incision was drawn open and search was made for the ureteral opening. It was not found. The external incision was extended downward and forward; the ureter was brought into view. The upper portion as it left the pelvis of the kidney was for a distance of half an inch imbedded in a cicatricial tissue. A longitudinal incision one centimeter long was made in the ureter half or three-quarters of an inch below the pelvic opening. A small metal probe introduced through the ureter into this incision passed downward for six inches. In passing downward, however, a stricture was found just below the point of entrance of the ureter into the pelvis. The ureter was adherent to the surrounding adipose tissue at this point. The adhesions were broken up by the scalpel, and the stricture opened by a longitudinal incision on the probe as a guide. The opened stricture was seen to be one centimeter long. No stricture was found elsewhere in the ureter. The patulency of the ureter was established by uniting the wall of the ureter below the stricture to the pelvic wall, leaving the stricture as a loop. The procedure was similar to the Heinecke-Mikulicz operation upon the pylorus. The incision in the pelvis was closed by sutures; a rubber drainage-tube was placed in the wound down to the pelvis, and gauze packed into the wound anterior and posterior to the kidney. The upper portion of the external incision was closed by a suture. No drainage-tube was left in the ureter. The wound healed rapidly. The first two or three days the dressings were soiled by urine, but after the third day the urine passed through the ureter and continued to do so. The patient made an excellent recovery, all evidences of the former disease having disappeared. Whether the method would be as applicable to a case in which there was a stricture one and one-half inches

long experience must demonstrate. This would require a shortening of the ureter two and one-half to three inches.

Van Hook's experiments demonstrate that the ureter can be elongated with but slight traction, in some cases two inches and in others four inches. There is certainly present here a very promising field for experimentation.

CASE III.—The third case I shall report was referred to me by Dr. J. Akester, of Farina, Ill. The patient was a child, two years old. There was a large, solid tumor located in the left side of the abdomen, extending from beneath the ribs to the crest of the ilium and beyond the median line to the right. The abdomen was markedly protuberant, and the left half of it filled with the tumor. The abdomen walls were tightly drawn over it, and seemed thin. No fluctuation could be elicited, and the tumor seemed fixed. The urine was not examined chemically or microscopically. Nothing abnormal in quantity or appearance was ever observed by parents or physician.

The child was markedly emaciated. It was difficult for her to walk. She suffered much from indigestion and difficult breathing. So evident was her suffering and so great her restlessness that it was distressing to witness them. They made a powerful plea for relief.

My diagnosis was sarcoma of the kidney. Upon the request of the father, who was apprised of the danger of the return within a few months, the tumor was extirpated June 28, 1893. A median incision was employed. The tumor was found behind the peritoneum. It was easily exposed and brought into view; a very long incision was required to deliver it. It extended from one inch above the pubes to near the ensiform cartilage. There were not many adhesions, so the tumor was easily brought out. We found much difficulty in keeping the intestines under control. They were finally wrapped in thick, hot compresses and laid upon the right abdominal wall. The tumor was pedunculated and sprung from the kidney. The ureter and bloodvessels were tied *en masse*, and the tumor and kidney removed. No stitches were used in the posterior layer of the peritoneum. A careful toilet was made of the peritoneal cavity and the abdomen closed without drainage. The patient made an excellent recovery. She had some gastric and intestinal disturbances, but resisted them well. At the end of the first week she was taken during the heat of the day to the hospital yards and placed in the shade of the trees on a stretcher under a tent. To this we partly

attributed her rapid recovery. She was taken home at the end of the fourth week. I was informed from time to time of the improvement in the health of the child. She gained rapidly in flesh and strength, and became a seemingly healthy child.

December 11th, five months after the operation, the parents noticed a fulness in the abdomen, and she was taken to Dr. Akester, who, upon examination, found a tumor as large as the one extirpated. It grew rapidly, and the remaining kidney became involved. Blood appeared in the urine; a little later vomiting, constipation, and rapid emaciation came on, and finally death, March 7, 1894, nine months after the operation. An autopsy was made, but was not quite satisfactory, as the parents would not allow the physician to carry away the tumor for careful examination. It was estimated the tumor was double the size of the one removed, and seemed to have begun in the remaining kidney. It was of the appearance of the first one, which was demonstrated by microscopical examination to be a round-celled sarcoma. I have but recorded another case of sarcoma of the kidney in a child which has, after its extirpation, recurred in a few months, and proved fatal.

After a study of the results in all recorded cases I am forced to very nearly the conclusion reached by S. W. Gross in 1885, who said: "From these data we may conclude that nephrectomy for sarcoma in children should not be repeated." Gross's data were drawn from the record of sixteen cases between the ages of sixteen months and seven years. Of these sixteen children seven survived and nine, or 56.25 per cent., perished. Of the seven survivors one was living with recurrence at the end of four months, four died of recurrence in five, six, nine, and eighteen months respectively. Two were lost sight of. It is not surprising that Gross should have written so positively against surgical interference. Since Gross's article there have been recorded, including my own case,[1] twenty cases of sarcoma of the kidney in children under five and one-half years of age operated upon. Of these, five perished and fifteen survived the operation, or a mortality of 25 per cent. Of those who survived, death occurred in one case in four months, one in five months, one in seven months, one in three months, one in eight and one-half months,

[1] These reports include the cases of Schmidt, Fischer, Bardenhauer, Dandois, Tillman, König(3), Landois, Witgel, Roberts, W. O., Kocher, Brockaw, Steele, Abbe, Dohrn, Croft, Puglie, Allsberg, and Dunning.

and one in eleven weeks, viz.: the average length of life in six cases was but four and one-half months. Of the remainder, one was lost sight of in three weeks, one in twenty-four days, and concerning five nothing except that they survived the operation could be ascertained. One was in good health two and one-half months after the operation, and one in one and one-half years after the operation, and one was well after thirty days, but how long after observation is not stated. But six were reported as in good health after the extirpation of the tumor. This record is truly appalling.

The length of time the tumor was known to be in existence, its size or form of pathological elements, did not seem to affect immediate or remote results. The more one studies the histories of the twenty cases I have collated, the more thoroughly will he be convinced of the utter inefficiency of surgery to cure sarcoma of the kidney in children. It cannot be denied, however, that where the patients survive the operation their lives are ofttimes prolonged a few months. In my own case the child, in all probability, lived five months (happy, healthful months) longer than it would have done had the tumor not been removed. Such a happy result has occurred in many instances, and I think furnished a sufficient justification—indeed, a clear indication—for the operation, if the parents, after a complete understanding of the risk and danger of quick recurrence, elect to have the tumor extirpated.

CASE IV. *Nephrectomy one month after vaginal hysterectomy for uretero-vaginal fistula; recovery.*—This patient was a young woman having quite extensive involvement of the lower portion of the uterus in cancerous process. The uterus was quite movable, but the left broad ligament was involved. The forceps operation was done at my private hospital, February 20, 1893. A nodule of cancerous tissue was left after removing the uterus. It was enucleated with the finger from between the folds of the broad ligament. It was believed that in this effort the ureter was torn across; a uretero-vaginal fistula resulted. There was twice, at intervals of ten days, a closure of this fistula for a few hours, and most intense suffering of the patient.

She became morbid and importunate for an operation. Her friends joined her, and after consultation with her physician, Dr. Kimbal, of Marion, Indiana, and with Dr. Pfaff, of Indianapolis, I decided to institute operative measures. The vault of the vagina was hard and unyielding, the opening of the uterer was upon the posterior surface

of the vagina. We did not think we could be successful in performing the Parvin or Bandl operation, concluding the only feasible methods to be adopted were either a kolpokleisis, after an artificial vesico-vaginal fistula had been established, or a nephrectomy. The latter was chosen. We were able, by the course taken by the probe, to demonstrate that the fistula was of the left ureter. The left kidney was removed, the oblique lumbar incision being employed. No difficulties were encountered. The kidney was healthy. At the end of two weeks the wound was entirely healed, and the patient went to her home at the end of three weeks. Just before returning home a vaginal examination was made, and a hard nodule was found near the site of the nodule removed from the left broad ligament. The cancer had recurred in seven weeks. The patient lived three months longer, and died of exhaustion and septicemia.

The writer[1] has, in a previous article, discussed in detail the treatment of uretero-vaginal fistula following hysterectomy. He has no reason at present to dissent from the conclusions arrived at in the article. His conclusion relating to hysterectomy is, "Nephrectomy is a justifiable procedure in uretero-vaginal fistula when there is obstruction to a free flow of urine into the vagina that cannot be overcome by dilatation of the fistulous opening, in case of failure of plastic operations, and when the corresponding kidney is markedly diseased." The transplantation of the ureters into the rectum entails upon the patient great suffering, and subjects her to the great danger of ureteritis, nephritis, and pyelitis, and moreover the mortality is nearly or quite as great as that of nephrectomy.

In view of the frequent failures, and the certain resultant irritation from residual urine when successful, I do not believe kolpokleisis should be resorted to in cases of stricture following hysterectomy for cancer. The only procedure, it seems to me as preferable to nephrectomy, is a plastic operation which looks to the re-establishment of the ureter after the plan of Parvin or Bandl, as modified by Cushing, viz.: by passing a probe from the bladder into and through the vesical end of the ureter and onward through the fistula into the ureter, and then by a plastic operation upon the vaginal vault make an artificial canal continuous with the severed ends of the ureter. Unquestionably there will be a tendency to the formation of stricture of the

[1] Annals of Gynecology, August, 1893, p. 665.

ureter in such cases, which may be overcome by dilatation. The mortality from nephrectomy for fistula is twelve and one-half per cent., which is, I believe, about the normal rate of mortality when the remaining kidney is not diseased or the patient exhausted by long-continued suppuration or constitutional disease.

DISCUSSION.

DR. M. ROSENWASSER, of Cleveland.—Mr. President: I do not rise to offer any criticism on this excellent paper, but desire to call attention to the difficulties of the differential diagnosis between ovarian tumors and renal cysts, a difficulty which was encountered by the essayist in his report of the second case. His patient said she did not know whether the tumor grew upward or downward. This symptom is of no value, for the reason that patients never know whether the tumor is growing up or down. There are some points, however, which will enable us to make a differential diagnosis—an approximate, one at least. A growing renal cyst or tumor always pushes the large superimposed intestine inward toward the median line, and we find over it a tympanitic sound. The tumor is more or less fixed. There may be some difficulty in differentiating between such a tumor and an intra-ligamentous cyst, the latter being also fixed to one side or the other. An intra-ligamentous cyst dips down into the pelvis, depressing the vault of the vagina. A cyst of the kidney usually remains high up over the pelvic brim.

DR. W. E. B. DAVIS, of Birmingham, Ala.—We all feel under obligations to Dr. Dunning for his excellent paper, which is full of valuable suggestions. I am convinced, however, that operations on the ureter will always be unsatisfactory. We will get a stricture which in the majority of cases will cause trouble afterward, and it would seem that our resort in these cases will generally have to be the removal of the kidney, and the mortality being large, it is a condition that the patient will frequently choose to bear rather than to be subjected to so serious an operation.

As to operations for sarcoma of the kidney, they bring surgery into disrepute. It is not satisfactory surgery to operate on these patients, and see them die in a few months afterward from a recurrence of the disease.

There is difficulty sometimes, as the author has pointed out, in diag-

nosticating cases of cyst of the kidney; also cases of hydronephrosis, where the disease develops rapidly. Quite recently I had an experience which will illustrate the difficulty of differentiating this condition of the kidney from an ectopic gestation. The patient was the wife of a physician. During the last months of pregnancy he had observed a tumor, not so large as a fetal head, high up in the right lumbar region; but he considered it to be at that time, without careful examination, a portion of the fetus. After his wife was confined the tumor was easily mapped out by him. I saw her a week afterward, when it extended half-way to the median line, having started from the right lumbar region. I did not make a vaginal examination. He had repaired the perineum, and feared that it would be broken down. At the end of another week I was called, and found her condition bad; although able to sit up, she had the appearance of having bled a good deal. It simulated closely a rapidly growing cyst of the kidney. I could not reach it by vaginal examination. An operation revealed an ectopic gestation—a pregnancy which had taken place before the one in the uterus, no doubt, which had gone on in a quiescent state until after delivery, when the traumatism brought about by this condition caused a fresh flow of blood and the condition that we found. I will say that I was impressed that it was a case of ectopic gestation before I did the operation.

Dr. A. H. Cordier, of Kansas City.—I want to compliment Dr. Dunning on the results of his work. I am firmly of the opinion that many of the cases of post-nephritic abscesses we have in our practice are due, like abscesses in the region of the appendix, to perforations occurring about the pelvis of the kidney, a small calculus, or possibly a little suppuration or ulceration that cuts its way into the tissues surrounding the kidney, and we have post-nephritic abscess in this location. Many of these cases in which the kidney is removed could be saved. It is surprising to what extent the kidney will retain its function after incision and drainage and removal of the cause of irritation. In the case I reported briefly in the early part of the meeting, where I removed a large stone weighing three ounces from the pelvis of the kidney, the kidney was enormously dilated, so much so that they sent for me to do an ovariotomy; yet the kidney secreted a pint and a half of urine through the lumbar incision for two weeks after operation. It might have been ideal surgery to remove that kidney at the same time, but the patient has recovered, and the kidney is secreting healthy urine at this time.

The question of diagnosis is important in the female as well as in

the male. By the use of the urethral catheter we are enabled in the majority of instances to tell exactly which kidney is diseased, so that the question comes up, which side to operate upon. If the ureter is not patulous, it is also a diagnostic point of the side that is diseased. We have positive evidence from the introduction of the urethral catheter whether the ureter is passable or not. I think we can look forward to the time when strictures of the ureter will be resected by some one with mechanical ingenuity and surgical ability. In the male the question of diagnosis is reduced materially, and made more possible by the fact that we have no ovarian tumors to contend with, which is the most conflicting element we have in making these diagnoses.

Dr. M. Hartwig, of Buffalo (by invitation).—The essayist did not speak of the original suggestion of Simon, of Heidelberg, who has taught us that in women catheterization of the ureters is a simple procedure. We can see the whole bladder like an open ball[1] when the urethra is dilated, and when one introduces Simon's largest speculum he can see the entrance of the ureter into the bladder very readily; hence the introduction of the catheter up toward the stricture should be an easy thing, and at all events ought to be tried previous to performing any operation as soon as stricture of the ureter is supposed to be the cause of the difficulty.

I want to ask a question of the last speaker—Dr. Cordier. He stated that the urine of his patient was normal. I would ask whether he subjected the urine to a careful microscopic examination. Where one has removed a stone from the kidney and drained the urine afterward it will not come down to normal. Microbes will be found in it, although the woman will gain in flesh and weight and feel first-rate, which leaves the impression sometimes that we have to expect subsequent difficulty.

Dr. Cordier.—The urine secreted was healthy and normal. It had not come in contact with septic material after its secretion from the kidney. The performance of the function of elimination was just as perfect as though pyonephrosis had not existed.

Dr. Dunning (closing the discussion).—I have little to say. I wish, however, to speak a word of caution which I think is necessary for us to heed in the matter of catheterization of the ureters. I think it has been conclusively demonstrated by a few cases, especially the case of Pozzi, in which there was a patulous opening externally on the abdominal wall of the severed end of the ureter, and in which he found, under

[1] Hartwig: "Cystoscopy." The Medical News, August 13, 1892, vol. lxi. p. 195.

the strictest antiseptic precautions in dressing, there resulted interstitial nephritis. The enthusiastic use of the ureteral sound will lead to a great deal of difficulty, and it is my belief that too much of it is being done at the present time.

In regard to the method advised for overcoming stricture in the upper portion of the ureter, I believe it will be found successful. The operation itself, which is virtually that of nephrotomy, is attended with but a slight degree of mortality. It is a fact that by opening the kidney and draining it where we have an accumulation of pus or fluid in the pelvis of the kidney—if we do the combined operations of nephrotomy and nephrectomy we save the patient less trouble than by doing a nephrectomy alone, and the mortality rate is less. So we lose nothing if we fail to overcome the stricture. Whether an organ so vital as the kidney should be saved if possible is worth our while to pause and consider, and to endeavor, by means which have been devised, to overcome the stricture.

One other point, and I am done. Dr. Davis made a statement that I cannot quite agree with—that is, that an operation for sarcoma of the kidney should not be done because the growth recurs. If it did not recur so speedily, his remarks would have no force; but in children it recurs quickly and kills the patient at the end of a few months. The same principle applied to vaginal hysterectomy would rule that operation out of our domain. I have done quite a number of hysterectomie in my practice, and not one patient on whom I operated on longer than two years ago is now alive. My experience is that they all die from recurrence after vaginal hysterectomy. That is the rule. If we apply Dr. Davis's rule, we would take from women the great possibilities of this operation. I therefore disapprove of the statement.

PROGRESSIVE CUTANEOUS ATROPHY OF THE VULVA (KRAUROSIS VULVÆ)

Considered with Special Reference to Its Operative Treatment.

By CHARLES A. L. REED, M.D.,
CINCINNATI.

The disease which comprises the title of this paper has become generally known by the name of *kraurosis vulvæ*. This name, which was coined by Breisky, simply signifies shrinkage of the vulva, the initial term being derived from the Greek word κραῦρος. The chief objection to be urged against this terminology is that it is not sufficiently definitive. As employed, it may and naturally does imply shrinkage of any or all of the structures which collectively comprise the vulva, when, as a matter of fact, the diseased changes which it is intended to indicate are restricted to the skin and its immediate connective tissue covering either a particular area or all of the pudendum, including the fourchette and the perineum. I have never been able to observe, either clinically or microscopically, the extension of this disease to the so-called mucous membrane within the introitus vaginæ, nor have I been able to discover from any published reports satisfactory evidence of the occurrence of the disease in this latter locality; but even if it were true that it does thus occur, either primarily or by extension, the almost complete histological identity of the lining of the vagina at the inlet with the adjacent skin leaves practically unmodified the statement that the disease is essentially one restricted to the vulval integument. Couple with this the additional facts—namely, that the disease is atrophic in its ultimate manifestation, and that it always persists until the involved areas of integument undergo the extreme changes which shall be presently described—I am convinced that for English-speaking people the term progressive cutaneous atrophy of the vulva

must be more satisfactory than the Greek derivative, which has already acquired a prominent place in the literature of the subject. I feel that I am confirmed to an important extent in these views by the Germans, who, although employing the word kraurosis, speak of the disease as *Hautatrophie am pudendum muliebro*, and more particularly by Sänger, who, since the preceding lines of this paragraph were written, has designated the disease "*Progressive prasenile und senile atrophie der Vulva mit Pachydermie.*"

The history of the disease, at least so far as modern literature is concerned, is very recent. The credit of having first described its clinical characteristics must be accorded to our distinguished fellow-countryman, Dr. Robert F. Weir, of New York, who, in 1875,[1] described it as an ichthyosis of the vulva. Tait, in his more recent work, alludes to the same condition as having been observed by him at about the same time that Weir's description was published. No account of the pathology of the disease was published until 1885,[1] when Briesky, of Prague, reported[2] twelve cases with careful study of their pathological features. Although the disease had doubtless been observed for a long time, even prior to 1875, there does not seem to be evidence that it was looked upon as an entity in the clinico-pathological category until the publication of the studies by Breisky. There have been but few contributions to the subject since that time, but all of those which have embraced original observation have tended to establish the condition as a distinct disease, a conclusion which has been resisted by such *doctrinaire* writers as have seen fit to give attention to the matter. The most authoritative expression on this phase of the question, however, is that which emanated from the *Gesellschaft für Geburtschülfe und Gynäkologie zu Berlin*,[3] at its meeting in February of the current year, on which occasion the consensus of opinion, based upon the fullest consideration of recorded facts and upon the widest personal experience of the participants in the debate, was to the effect that the disease in question was entitled to recognition as a distinct entity.

The etiology of this disease is very obscure. It occurs without the previous existence of any other disease of the skin or vulva. In Orthman's cases no sugar could be found in the urine, and there

[1] N. Y. Medical Journal, March, 1875.
[2] Archiv f. Heilkunde, Prague, 1885.
[3] Ctrlbl. f. Gynäk., March 31, 1894, No. 13, pp. 309–313.

were no histories of syphilis. In one of my own cases, occurring in a woman of fifty-six, there was the history of syphilis in early life, but this history was not confirmed by any later manifestation of the specific complaint. I am inclined to look upon the facts in this case as having been rather of chance occurrence than as having any causal relationship. It is, indeed, fairly established that this atrophy of the vulva is not of syphilitic origin, a fact which is sufficiently confirmed by Lewin,[1] who stated that he had treated between seventy thousand and eighty thousand women in his service at the Charité, and that in all of that experience he had not encountered a single case of kraurosis vulvæ. Gonorrhea and a chronic non-specific vaginal discharge are recognized by some observers as probable etiological factors. The disease is more common in women after forty, a fact which would seem to identify it with the usual trophic changes of senility. The fact that it occurs in early life, during the active continuance of menstruation, and in the absence of any indication whatever of precocious menopause, at once dissociates it from necessary connection with those changes of nutrition, either local or general, which occur in connection with advanced years. It is true, however, as Olshausen[2] has stated, that in a limited number of cases the atrophic change seems to be inaugurated by the extirpation of the uterine appendages, and I have observed this in one of my own cases (Case VI.). In one of Javonsky's cases the disease seemed to start in the cicatrix of a previously lacerated perineum. I am forced to conclude, after carefully studying the details of such published cases as have come under my observation, that the conditions which have been suggested as causal are so various as to seem entirely accidental. So far as microscopic research is concerned, none of these conditions have been demonstrated to have an etiological value. The fact, however, that the disease, although essentially inflammatory in character, is limited either to circumscribed areas in the vulval integument or else to the entire pudendal skin, and the additional fact that it occurs without adequate demonstrable local cause, forces us to consider either the peripheral trophic nerve filaments, or else the ganglia whence they originate, as the possible seat of initial lesion.

The pathological and clinical features of these cases are character-

[1] Ctrlbl. f. Gynäk., 1894, No. 13, pp. 309–313.

[2] Ibid.

istic. The first changes obvious to the naked eye consist of small vascular areas around the introitus vaginæ. These areas are not elevated, as if seats of merely inflammatory engorgement, but are slightly depressed relatively to the adjacent epithelial surfaces. They are exquisitely painful to the touch, and efforts at sexual intercourse are generally agonizing and futile. About this same time careful inspection will reveal a narrowing of the vaginal orifice, associated with diminished elasticity of the structures. The cutaneous or mucocutaneous surfaces will now be observed to have lost a certain proportion of their pigment, giving them a more or less translucent appearance, which increases until, as in one of my cases yet under observation, it becomes so transparent that the larger capillaries and minute ecchymoses may be readily discerned beneath it. The skin thus affected becomes tense, effacing in a more or less pronounced degree all of the normal folds of the vulva and narrowing the vaginal orifice until, in the case of a multipara, as Mr. Tait says,[1] "incredulity may be excused when the patient states that she has borne children." (See Fig. 1.) This shrinking is one of the leading features of the disease, and it may be manifested in one locality rather than in another, according as one locality rather than another is the center of the diseased activity. It may be stated, however, that whatever particular structure may be victimized by the atrophic process, it does not follow that the disease will become thus limited, but that, on the contrary, it has a tendency to progress until all the vulva is involved. Breisky speaks of the shrinking (*Schrumfung*) particularly of the nymphæ, which certainly show liability to this disease. Fusion of the labia minora and the labia majora, to the extent of the apparent disappearance of the former, has been observed in two of my own cases, and by Ohmann-Dumesnil,[2] who also records a distinct wasting of the mons veneris. The integument from the mons veneris to the meatus urinarius may be so tense as to obliterate all the normal folds, the glans clitoridis being manifest by a depression rather than an elevation. In a case by Scholtz,[3] recorded by Ohmann-Dumesnil, there was complete disappearance of the labia, both large and small, associated with complete alopecia vulvæ, with the exception of a small tuft of hair on the mons veneris.

[1] Diseases of Women and Obstetrical Surgery, Philadelphia, 1889, p. 58.
[2] New Orleans Medical and Surgical Journal, March, 1890, p. 635.
[3] Loc. cit.

FIG. 1.

Fig. 2.

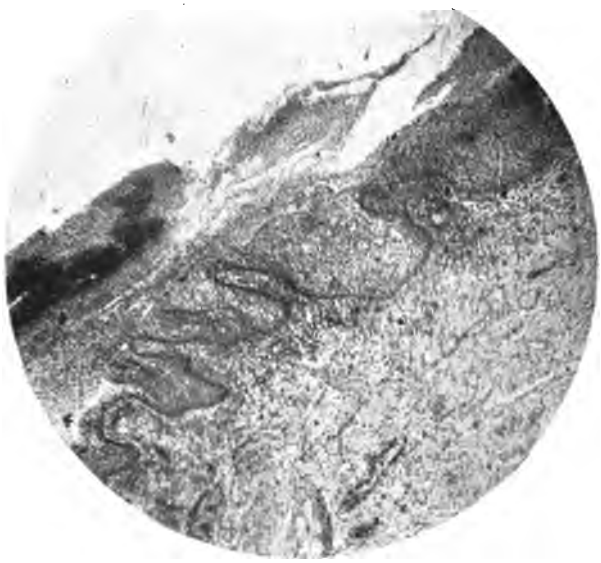
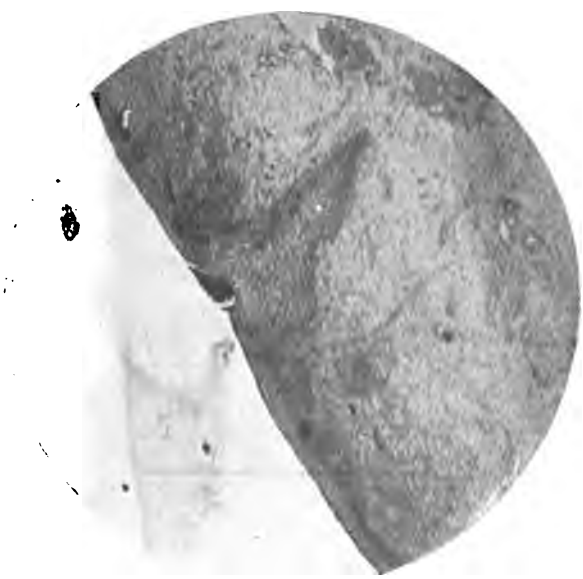


Fig. 3.



The microscopical examinations in my own cases were made in my private pathological laboratory by my associate, Dr. Henry W. Bettman. A summarization of his careful notes may be presented as follows (Fig. 4)[1]: There is marked hyperemia of the integument. Hemorrhages into the substance and upon the surface are noted. The epithelium is of very irregular thickness, being here and there replaced by extravasated blood. The condition of the epidermis varies in different sections and in different places in the same section. Its leading characteristic may be designated as extreme irregularity. In some places it is of normal thickness, in others it is almost entirely or entirely eroded. In some places there are small rents or fissures, the surface epithelium at such points being lost or displaced, while irregular cracks extend a short distance into the corium. The number of such fissures is small. In some places the epidermis is covered by bloody extravasation; in others it is lifted *en masse* from the corium by an effusion of blood. The effused blood lies, as a rule, directly upon the surface of the eroded epithelium (see Fig. 2), although it is occasionally found between the epithelium and corium. The blood-cells are very well preserved and stain beautifully with eosin; here and there the blood has taken on the reddish-brown color characteristic of old blood effusions. Here and there are epithelial "pearls," not very different from the well-known epithelial nests of epithelioma, but smaller and less typical. The corium presents two conditions, viz.:

1. *Earlier stage:* Marked by cellular infiltration, and in some places pronounced hyperemia. Small round cells everywhere invade the subepithelial tissue—in some places diffusely, in others forming irregular collections. The papillæ are infiltrated, often occupied entirely by small round cells, so that none of the original connective tissue can be detected. In places the papillæ are covered with a very thin layer of epidermis, in others they are entirely bare, granulation-tissue extending to the surface. There are no hemorrhages into the corium. (See Fig. 5.)

2. *Later stage:* Cellular infiltration less marked, and characterized by an almost total disappearance of papillæ. The disappearance of the papillæ is unquestionably due to the organization and

[1] I am indebted for the photo-micrographs illustrating this article to my friend, Prof. M. H. Fletcher, M.D., D.D.S.

shrinking of the granulation-tissue. Various stages can be noted in any given section. There were no observations of nerve-endings.

Orthman[1] studied five cases from the clinic of Martin in Berlin. In one case microscopical examination was made. The tissues were found to be partly hypertrophied and partly atrophied, thus demonstrating the earlier and later stages of the disease in the same section. The rete Malpighii was markedly diminished, and in some instances entirely obliterated. There was absence of papillæ, and the wave-like arrangement of the corium was occasionally entirely lost, the latter being dense and sclerosed, resembling scar-tissue. There is occasional small-celled infiltration, increasing from above downward; hyperplasia of tissue at marginal zone where healthy skin begins; horny layer of epidermis much wider, the cells lying in many strata over the widened rete Malpighii; papillæ and entire corium increased in respect of width and infiltrated with small cells. In another case, which was ulcerated, his recorded observation is as follows: "Section through large ulcer in upper third of right labium majus; on inner side, hypertrophy of epithelium of epidermis, gradually diminishing toward and disappearing at ulcer; papillæ also obliterated at ulcerated part. On outer side the same process reversed; epithelia increasing up to hypertrophy; corresponding with the gradual disappearance of epithelia on both sides of the ulcer, the papillæ increase, often penetrating to the superficies of the epidermis; there is a complete small-celled infiltration of subcutaneous fatty and connective tissue, filling up clefts in the latter, usually in a direction perpendicular to superficies; a few lumina of vessels seen on the tissue compressed and narrowed by surrounding infiltration and hypertrophy." Orthman also failed to observe the nerve-endings in any of his sections. Orthman also made careful bacteriological studies of his cases, but found only the micro-organisms which usually occur about the vulva and vagina.

The symptomatology of progressive atrophy of the vulva varies in different cases. It usually happens that the first complaint of the patient is with reference to dyspareunia. The painful puncta of the early stage and the painful inelasticity of the later stage are necessary impediments to the copulative act. Yet in the absence of the sexual relation the disease is not of itself particularly painful; on

[1] Zeitschr. f. Geburtsh. u. Gynäk., Stuttgart, xix. pp. 283–296.

the contrary, in its later stages there seems to be a loss of sensation in the entire diseased area. Itching is a very inconstant symptom —one more frequently absent than present. In a study of thirty-five cases by my friend Dr. Ohmann-Dumesnil,[1] thirteen are recorded as being afflicted with itching varying from moderate to intense; Janovsky's cases were not afflicted with this symptom; Orthman's cases,[2] which were not included in Ohmann-Dumesnil's table, were five in number, only one of whom applied for relief on account of itching and intense burning. This symptom occurred in two of the writer's own cases, but was restricted to the earlier stages of the disease. Heitzmann, however, records it as persisting after repeated curettings. Tait speaks of the disease as being painless in its last stages. The objective features of the disease, upon which the chief diagnostic importance is placed, have been recounted in the paragraph relating to pathology.

In the earlier stages the disease is liable to be dismissed with the convenient diagnosis of vaginismus. Careful inspection will, however, reveal the sensitive vascular areas just within the introitus, and will show the already established shrinkage of the vulval integument. During the stage of itching—sometimes absent—this disease may be confused with neuro-fibrosis vulvæ, as described by Webster.[3] As the former disease is atrophic and the latter hypertrophic in character, a careful inspection will reveal the difference even in the early stages. When the areas of atrophy begin to be well defined, the kraurosis may be mistaken for ichthyosis. This is all the more confusing because of the disposition of the shrunken patches to assume the form of polygonal plaques. This, however, according to the observation of the writer, is true only as relates to the atrophic areas as a whole; but these latter, when once formed, do not fissure and subdivide, as is true of ichthyosis. In the latter malady there is a tendency to epithelial exfoliation, which is distinctly not true of progressive atrophy.

Mr. Tait says that[4] "the patient should always be informed that the progress of the disease will extend over years, that it will certainly get well in time, but that treatment from time to time will

[1] New Orleans Med. and Surg. Journ., March, 1890, p. 638.
[2] Zeitschr. f. Geburtsh. u. Gynäk., Stuttgart, 1890, vol. xxix. pp. 283–296.
[3] Lab. Report Royal College of Physicians, Edinburgh, 1891, vol. iii.
[4] Loc. cit.

give her relief." From this author's description of the final stage—*i. e.*, of parchment-like induration of the diseased integument—it must be inferred that what he means by recovery must relate to the subjective symptoms rather than to restoration of the parts to their normal physical condition. On the other hand, the opinion of all observers is to the effect that without operative relief these cases are progressive and permanent. We are never justified in promising cure by any sort of treatment, although pronounced relief has been realized. In two of the author's own cases, treated by excision, marital relations were satisfactorily re-established after an interruption extending over a series of years, the remaining vulval structures manifesting only normal characteristics.

The treatment may with propriety be divided into palliative and curative. The former consists in the application of various medicaments for the relief of pain. Carbolic acid, by virtue of its primary or anesthetic effect, affords temporary relief; but its secondary or escharotic effect leaves the terminal nerve filaments even more exposed than before, with a corresponding increase of discomfort. Tait speaks of a solution of neutral acetate of lead in glycerin placed on cotton between the nymphæ as having a soothing effect when used at bedtime. He condemns cocaine. The application of stick nitrate of silver, repeated until the degenerated structures are destroyed and replaced by patches of cicatricial tissue, mitigates the suffering, but does not arrest the progress of the disease. Curetting to the extent of scraping away all of the shrunken skin has been practised by Heitzmann, but as the treatment is a prolonged one, having involved in one case as many as ten repetitions of the severe operation, and as the result of the treatment must involve the deposit of inelastic cicatricial tissue over areas more or less extensive, the method is hardly to be commended as a line of practice.

The curative treatment is that by excision. The writer applied this practice in an incipient case several years ago. The disease in this instance had only advanced to the stage of vascular areas. These were located around the introitus, from both sides of which an ellipse of mucous membrane was removed, the denuded margins being brought together by interrupted sutures. Temporary relief was realized, but the disease was manifested in the integument after seven months. Martin, reported by Orthman, inaugurated the practice of more complete excision. The technique is not in the least

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.

difficult, although it varies according to the location of the disease. In all instances it involved the complete removal of the diseased tissue and the approximation of the raw margins. The usual laxity of the deeper tissues about the vulva readily admits of this plastic manœuver, although in one case, involving the vestibule, it was found necessary to liberate the lateral flaps by secondary incisions half an inch distant, after which the skin glided readily over the pubis and was approximated by a central line of sutures. The secondary incisions were then readily closed in the same way. If this operation is done after the limits of the disease have become well established, no fear need be entertained of recurrence. This has been true in the cases of both Martin and the author, although from the case above alluded to it is evident that if excision is practised in the early stage of the disease further manifestations may occur beyond the field of operation. Orthman[1] reported five cases successfully operated upon by Martin in this way, and Martin[2] has since reported three additional cases, all of them successful. The operation and its results are fairly well represented in Figs. 6 and 7 respectively, the case in question (Case III.) having been one in which the disease was manifested particularly in the nymphæ, fourchette, and perineum. The free-hand drawings and colorings by Mr. Hugh Horsfall are quite as successful as can be expected in handling so difficult a subject.

I beg leave to append brief summaries of the following illustrative cases:

Case I. *Incipient kraurosis vulvæ; premature operation; subsequent development of the disease beyond the area of operation.*—Mrs. B., Hamilton, O., aged forty-two years, the mother of two children, came to me in October, 1889, complaining of painful coition. I examined her carefully, and found the seat of pain resident just within the ostium vaginæ. There seemed to be spasmodic contraction of the canal when I made an effort to introduce my finger. Careful inspection revealed the presence of several red spots, very painful to the touch, which were arranged in a row on either side of the vagina at a position corresponding to the location of the obliterated carunculæ myrtiformes. I removed these red spots by excision,

[1] Zeitschr. f. Geburtsh. u. Gynäk., Stuttgart, vol. xix. pp. 283–296.
[2] Centralb. f. Gynäk., 1894, No. 13, pp. 309–313.

taking a small ellipse of tissue from either side of the mucous membrane. The operation was followed by prompt union and relief of the symptoms. The patient soon after removed to Colorado, and I have not seen her since. I, however, received a letter from her two years later, in which she stated that after a few months of improvement she again experienced pain at intercourse; that the distress had increased until the marital act had become impossible. Her expressive statement was that she "seemed to be all closed up." I now feel convinced, in the light of the lesson taught me by the next case, that this patient was afflicted with incipient progressive atrophy of the vulva at the time of my operation, and that the disease has since become manifested in its usual form.

CASE II. *Incipient kraurosis; premature operation; subsequent development of the disease beyond the area of operation.*—Mrs. H., who had one child eight years old, came to me in June, 1893, from Southern Kentucky. She complained of a more or less constant drawing pain about the vulva, some distress on urination, and extreme discomfort in sexual intercourse. Her marital relations had indeed been rendered almost impossible during the last four years. On examination the ostium vaginæ was found somewhat narrower than usual. A number of extremely painful carunculæ were found just within the orifice of the vagina. To touch one of these with a probe would elicit complaints of pain and spasmodic contraction of the vagina and of the vulva and perineal muscles. This circumstance prompted me to look upon the vulval contraction as spastic and of reflex character, depending upon the carunculæ as the exciting cause. I accordingly advised excision of the latter. This was done at my hospital the day after her admission, in the presence and with the assistance of Dr. Johnston and Dr. Pottenger. An ellipse of tissue was removed from either side of the vagina, just within the ostium, extending from the meatus urinarius to almost the median line of the posterior vaginal wall, and each one wide enough to embrace the carunculæ, all of which were arranged in a line around the vagina, just at its outlet. The wounds, one upon either side, were closed by interrupted sutures, and the case made an excellent recovery, leaving the hospital two weeks later. At the time of her dismissal there was not the sign of a remaining caruncle, and the tenderness referred to them had quite disappeared.

On resuming her marital relations, however, she discovered that

the introitus was yet unyielding, and that intercourse was accomplished with but little more satisfaction than formerly. She returned to me the following December. Examination then revealed the fact that the vulval contraction was not spastic but atrophic, and that the disease had made decided progress during her absence. There was absorption of the natural pigment and there was marked disappearance of the normal elasticity of the skin. The vulval orifice was greatly constricted. The nymphæ had shrunk considerably, but the most marked change was about the fourchette, which had shrunken until its margin was less than half an inch from the meatus urinarius. The true character of the case was now declared, although the limitations of the atrophic area had not yet become clearly outlined, as sometimes occurs in this disease. As soon as this takes place I shall urge the curative operation, the most satisfactory results of which were realized in the next case.

CASE III. *Kraurosis vulvæ of ten years' development; excision of atrophic area; recovery.*—Mrs. X., married; never conceived. She was referred to me by Dr. Dulaney, in 1894. She had submitted to abdominal section twice—once for the removal of uterine appendages and once for the relief of adhesions—both times at the hands of a distinguished local surgeon. She had also been operated upon for hemorrhoids, with which she was yet afflicted. Sexual relations had been impossible for ten years, during all of which time she had complained of a drawing, pinching, burning pain in the vulva, but no itching. On examination the vulval orifice was found to be extremely narrow. The nymphæ could be traced only by lines of fusion with the labia majora, and the integument covering them was almost destitute of pigment and had a glossy, varnish-like appearance. The same state of integument existed on the fourchette, which had so thoroughly lost its elasticity that it was ruptured superficially by an attempt to introduce my finger into the vagina, but it was observed that the fissure thus caused did not bleed. A row of deep carunculæ entirely encircled the ostium vaginæ just at the beginning of the vaginal mucous membrane. This patient entered my hospital, and was operated upon the next day in the presence of Dr. Dulaney and my assistants.

The operation consisted in making an incision through the integument just beyond the outer margin of the affected area and extending from one side around to the other, and another incision beginning at

the same point, but extending into the vagina just within the carunculæ and terminating on the opposite side at the end of the first incision. The intervening integument was then removed and the cut surfaces approximated by interrupted sutures. It was noticed in making this incision and on removing the diseased skin that there was a great dearth—practically an absence—of connective tissue beneath, and that the muscular tissue was to be observed on either side of the vulva. The result was union by first intention. In two weeks the patient stated that she had become unconscious of the vulva. Three weeks later I introduced two fingers into the vagina quite painlessly. The specimen removed from this case comprises the basis of investigations by Dr. Bettman, already quoted.

CASE IV. *Kraurosis vulvæ complicated with vaginitis adhesiva; no operation upon the former; case yet under observation.*—Mrs. S., of Montgomery County, Ohio, aged fifty-two years, married, but had never conceived, was sent to me by Dr. R. D. Huggins, of West Alexandria. She had vaginitis adhesiva, a strong band having formed between the left wall of the vagina and the cervix. Several other bands constricted the vagina in its upper third. The ostium vaginæ was very narrow, admitting the finger only with difficulty and at the expense of great pain. Several patches denuded of epithelium were noticed just within the introitus. The labia minora were fused with the larger lips. The skin covering the vaginal half of the perineum and the inner margins of the lips was glistening and inelastic, and contained several fissures, giving it the appearance of ichthyosis. There had been but little itching, and that had been experienced in the early history of the case.

I operated on the intra-vaginal adhesions first, which I was prompted to do because the symptoms referred to it were of the more urgent character, and I did not do both operations at the same time chiefly to avoid having the resulting discharge from above contaminate the field of operation on the vulva, and thus defeat union by first intention. She is yet under observation, and contemplates submitting to operation for the cure of the vulval atrophy at a very early date.

CASE V. *Kraurosis vulvæ associated with contractive diathesis; operation; recovery.*—Miss R., aged fifty years, came to me two years ago, complaining of a painful condition about the vulva. She was a well-nourished, very stout woman. By her own confession she

had been a confirmed masturbator during nearly all of her life. On inspection the condition of the vulva was found to be as follows: There was fusion of the prepuce to the clitoris, and the fissure of demarcation between this organ and the labia was practically obliterated by the shrinkage of the skin. The labia minora were indicated only by a line of fusion with the labia majora, except at the upper extremity, where for less than half an inch a separate fold indicated that they yet had a partially distinct existence. The labia majora, which were very fat, were drawn tensely in their inner surfaces by the skin, which was glistening and manifestly shrunken. The pigment had so far disappeared from the skin that the larger capillaries could be distinctly seen through it. Upon the inner aspect of either labium majus there were numerous punctiform ecchymoses. At the introitus distinct areas could be observed evidently denuded of epithelium, being very red and very painful. The orifice of the vagina was very narrow indeed, hardly admitting the little finger. The patient complained of an intense sense of drawing in all parts of the floor of the pelvis. The flexor muscles of the thigh were always tense. In view of her history and the fact that the contractions complained of began in the vulvo-perineal region, where they were yet more distressing than elsewhere, I was disposed to look upon the muscular condition as reflex and the condition about the labia majora as a dermatitis due to mechanical irritation. As she was yet experiencing erotic sensations of an aberrant sort about the clitoris, and was, in consequence, engaging in solitary indulgences, I concluded that this was the centre of irritation, and accordingly excised the atrophic area from the vestibule to the mons veneris, incidentally doing a complete clitoridectomy. After her recovery from this operation she experienced less pain in the region operated upon, but, contrary to my expectation, the irritation on the inner aspect of the labia persisted and the tendency to contracture did not abate. I then had Dr. Hoppe see the case with me. It was his opinion that so far as the muscular contracture and the tendency to the same were concerned the essential lesion was in the motor centers, and that although the case had a large hysterical element, it would probably be progressive. The subsequent course of the case has justified both the diagnosis and prognosis just recorded. The contractures are now complained of not only in the floor of the pelvis and in the thighs, but in the neck and arms.

CASE VI. *Kraurosis vulvæ following extirpation of the uterine appendages and associated with marginal urethral caruncle.*—Mrs. L., aged thirty-eight years, widow, English, gave birth to a child at seven months' utero-gestation some years ago. She was taken by her husband, who was a physician, to consult Sir Spencer Wells, Mr. Lawson Tait, and other distinguished surgeons relative to pain in the pelvis. She was advised to submit to extirpation of the appendages, but afterward conceived. With a nervous system seriously shattered from reverses, she came to America in the capacity of a nurse, and has rendered conspicuous service in a number of our leading hospitals. In 1892 she submitted to an abdominal section for removal of the uterine appendages in a hospital in Maryland, from which she convalesced very slowly. She finally came into the hands of my friend Professor Reamy, suffering from serious symptoms of adhesions about the bladder, and was kindly referred by him to me for operation. A secondary abdominal section was accordingly done at my hospital, November, 1893, in the presence of Professor Reamy and my assistants. This feature of the case, while very interesting (and will be used as the basis of a report upon another subject), is only alluded to in this connection because of its possible etiological significance. An additional detail, which I wish to mention for the same reason, consists in the fact that the abdominal scar in both the primary and secondary operations underwent marked hypertrophy. The first operation, according to the patient's own statement, was followed by pus in the wound; the second closure, however, was absolutely by first intention. Another feature of importance was that during convalescence, and quite three weeks after the operation, she suddenly developed a temperature which upon two occasions sent the mercury to the top of the thermometer (112° F.), although a temperature of 105° to 108° was not infrequent. These exacerbations were very brief, lasting for less than half an hour, and were confirmed by a thermometer in each axilla and in the mouth. These trophic and thermic eccentricities are mentioned only to show the distinctly neurotic type of the patient. After her convalescence from the second abdominal section she called my attention to a very painful condition of the urethra and vulva. Upon inspection I found marked cutaneous atrophy of the latter, with a caruncle at the mouth of the former.

This case is one in which the history of the cutaneous vulval changes post-dates the first abdominal section and at once raises the question

as to the casual significance of the removal of the uterine appendages with the accompanying disturbance of the nerve-supply to the remaining genital organs. This question has been raised by other writers, recently by Olshausen; but for my own part, and in view of the fact that the vulva gets its supply of nerves from the superficial branches of the internal pudics and from the branches of the lesser sciatic, nerves which are not disturbed by the excision of the uterine appendages, I cannot see that the question has any serious bases of probability. It is true that trophic changes are presided over by branches of the sympathetic, but no known distribution of the nerves of that system can enable me to understand how the removal of the appendages can interfere with the vasomotor or trophic supply to the pudendum.

Knowledge relative to progressive cutaneous atrophy of the valva is too nebulous to justify final conclusions. That which seems to be conclusively demonstrated may be summarized as follows, viz.:

1. Progressive cutaneous atrophy of the vulva (kraurosis vulvæ) is a distinct disease.
2. It is of very rare occurrence.
3. It is essentially inflammatory in character, differing from other inflammations of the skin in the marked progressive atrophy which succeeds the stage of hyperemia and infiltration.
4. It is limited in its manifestations to the vulva.
5. It is manifestly not of syphilitic origin.
6. Its etiology is so obscure as to suggest a primary causal lesion in the trophic nerve-supply to the vulva.
7. Affected areas may be successfully excised.

DISCUSSION.

Dr. Walter B. Dorsett, of St. Louis.—Mr. President: I have been particularly interested in the classical description of this disease as presented by the speaker. It has been my privilege to see, treat, and study one of these cases, and I am very glad to know that Dr. Reed has arrived at some way by which they can be relieved. The case that I had charge of for a considerable time was one in which the atrophic condition did not stop at the external organs of generation,

but pervaded the entire genitalia. There was atrophy of both the labia minora and majora, the vaginal walls, the uterus, and ovaries.

These cases have been described by Dr. Ohmann-Dumesnil, who has collected thirty-five or forty typical cases of kraurosis, and has described them as such; but Dr. Reed has made a departure that is deserving of credit, in calling them cases of atrophy of the vulva. The case that came under my observation was one in which the hair was entirely absent, and in which sexual intercourse was excessively painful. There is, as was mentioned by the author of the paper, a possibility of mistaking it for a case of vaginismus, one that is due to a nervous influence entirely. Just what brings about this atrophic condition I am unable to say, but those of you who heard my first paper in regard to the priority of ligation of the uterine arteries will remember that I mentioned this case, and it was the one in which I first got the idea as to the cause of the condition, and believed it to be a case of artificial ligation of the vessels due in this particular case to an inverted uterus.

As to whether these cases are evidences of maternity or not, I am unable to say, but the one I had charge of had a child nine years previously.

DR. CORDIER (to Dr. Reed).—How many post-operative cases have you had in which the appendages have been removed, if any?

DR. REED.—Two.

DR. CORDIER.—I had one case in which the appendages had been removed two years previously, and it certainly presented the condition and symptoms of kraurosis vulvæ.

DR. H. W. LONGYEAR, of Detroit.—I have a case which perhaps might have been caused by the removal of the appendages. I saw it a few days before I came to this meeting, and it was a well-marked case of atrophy of the lips. They were smooth and almost white, and the hair about the spots was absent. The case was evidently one of long standing, the appendages having been removed several years ago.

DR. L. H. DUNNING.—I would ask Dr. Reed whether many of his cases occurred before the menopause?

DR. REED.—All but one.

DR. WILLIS G. MACDONALD, of Albany.—I wish to say a few words with reference to Dr. Reed's interesting paper, but more particularly from a pathological standpoint. Dr. Reed has furnished us with some beautiful micro-photographs showing the changes in the superficial layer of the epidermis. They are very interesting in the order they

are given. It has been said that atrophy is really a good name for this disease, although the pathology would seem to contradict that in some way. While there is occasionally observed atrophy of the vulva, yet, on the other hand, there are times, even from the pathological description which Dr. Reed has given us, when the condition is quite otherwise. There is an infiltration of some of the round cells apparently inflammatory in character. There is a condition which we term hyperplasia, which finally terminates in atrophy. It is very much like the condition we find in cirrhosis of the liver. It eventually becomes a condition of atrophy.

I sincerely hope that Dr. Reed will carry his investigations further, and examine the condition of the bloodvessels in this area. From what he has said, inflammatory changes have certainly occurred, because the vessels have ruptured. He has clear evidence of blood-clots. There must be associated with this condition hyaline degeneration. It is not altogether trophic; it cannot be, because it behaves differently from other tropho-neuroses. An examination of the peripheral nerves, looking for degenerated fibres, will also be interesting.

DR. DORSETT.—I would ask whether the plaques or patches presented translucent spots the size of a silver quarter, or whether there was a diffused condition of the mucous surface?

DR. REED.—If I may be permitted to answer the last question first, I will say that in one case which came under my observation these atrophic areas manifested themselves separately, but with the progress of the disease they coalesced, with loss of the normal pigment.

DR. DORSETT.—That is a picture of my case exactly.

DR. REED (resuming).—The very interesting remarks of Dr. Macdonald impress me favorably. True, the pathological research has not gone so far as it might have, but I hope to be able to carry on further investigations. The condition of the terminal nerve-filaments has not been described. We have in the literature of the subject but a single allusion to their conditon, and the intrinsic peculiarities of the statement are such that I do not feel warranted in quoting it; hence I look upon the literature of this entire subject as presenting a dearth of information relative to the condition of the nerve-filaments. The condition of the bloodvessels can be observed in some of the slides, and it is essentially one of degeneration. While microscopic examination reveals areas of engorgement and deposits of inflammatory infiltration amounting almost perhaps to hyperplasia, the fact remains that the gross appearance of the disease is never that of enlargement,

never the appearance of thickening, and all these changes are so thoroughly microscopic, so thoroughly limited to definite areas, that it occurs to me there is some trophic disturbance to bring about that limitation. Of course, the question must necessarily be held *sub judice*, and under what category we shall finally place this somewhat anomalous pathological state remains to be determined. I only hope that Dr. Macdonald and others will make investigation looking to the further elucidation of the subject.

THE ELEMENT OF HABIT IN GYNECIC DISEASE.

By GEORGE F. HULBERT, M.D.,
ST. LOUIS.

"The situation has never yet been occupied by man that has not its duty, its ideal. Yes, here in this poor, miserable actual; wherein thou even now standest; here, or nowhere is thine ideal. Work it out therefore, and in the working, Live, Believe, Be free."

The argument:

1. The natural endowment and condition.
2. Primitive type to standard type.
3. The law of conservation of energy operates for and necessitates the operation of the element of habit.
4. The law of conservation of energy, operating in conjunction with original endowment, insures persistence of the element of habit.
5. Due to operation of the law of continuity.
6. Variation in type acquired by change in environment operating on primitive type.
7. The law of conservation and continuity necessitates the operation of the element of habit in the variation in type.
8. Application of the argument.
9. Report of cases illustrating the variation in type and the element of habit.
10. Atavism the law of therapeutics.

In the evolution of truth accomplished by the finite mind it became necessary from the very nature of things that the beginning should be in the simple and often error-laden method of observing, collecting, arranging those incidents termed facts, and from these, by various processes of proving and testing, arriving at the knowledge of the thing sought for.

In all this there has and always will be the personal equation; and our experience and knowledge of this element clearly demonstrates a positive variation in types in all conditions and circumstances so universal that one is forced, if he really be a seeker after truth, to

become sceptical and stand askance on presentation to the results attained. While it can be readily and easily established that this variation is obedient to a universal law and order, it is not always a matter easily demonstrated that to the personal equation, in large degree, if not wholly, the variety in conclusion we seem to be so abundantly blessed with, and that, too, in relation to the same facts, methods, and etcetras of our work, must we attribute much of our delay, undoing and contradictions. If we will eliminate this factor to the extent of abolishing the conscious acquired *ego*, and permit the unconscious acquired capacity, evolved from hard, honest work for truth prevail in us, there is a law in the universe, the discovery of which was, has and will ever be the greatest of all ages, that of continuity or uniformity that will harmonize all confusion and lead hard and close to the truth. This has long since been recognized by the naturalist, physicist, mathematician, astronomer, and real scientist. But the large mass of the medical world and many of the leaders seem to have little conception of the great blessing at hand. What a brilliant, tragically earnest demonstration the discovery of the planet Neptune was of this thought, where the independent work of four men, who reasoned in accordance with this law, resulted in at last being able to turn the lens upon the very spot in space where the planet was fixed.

We do not wish to be understood as belittling in any sense the marvellous work and progress that have been made in the past in our profession, but simply call attention to a few truths which, if fully and reasonably comprehended, must necessarily lead to less waste of valuable time and energy, and brush away much unnecessarily and seemingly incessant contradiction and confusion. In the consideration of our theme we shall therefore endeavor so to approach and consider that this philosophy may be manifest, and at many places we can all find common ground of agreement, and thereby insure profit in what may follow at your hands.

As the first evidence of this we wish to call attention to the striking suggestiveness that words convey in the consideration of any subject, and always when rightly used point to truth. We are familiar with the words *natural*, *normal* and *standard*, and I dare say many of us use them more or less interchangeably, when in truth, while allied in meaning, they are and should be specific, and when so used lead to entirely different conceptions and enforce the truths contained in no uncertain way.

Natural is derived from *natura* meaning "born, produced," and, as the adjective, means pertaining to the constitution of a thing, belonging to native characteristics, essential, not assumed, put on or acquired. Normal is derived from *norma*, rule, and, as the adjective, means according to an established noun, rule or principle, conformed to a type or a regular form, acquired. Standard is derived from *extendere*, to spread out, to extend; it is used in the sense of that which is established as a rule or model.

Now, in the comprehension of the natural conditions and endowment of the human organism, to which horn of the problem are we at once led? Manifestly not to the normal or standard complete human organism, but to the born, essential characteristic of this organism, if we wish to find common ground for agreement, for here, elements of confusion, and errors are most completely eliminated, and at once do we deal with that which contains within itself, in the primitive type, every energy, function and structure that, in larger and more complete expression we find in the acquired organism, the human body. In short we can all of us come together at the "natura" of the acquired organism, comprehend and appreciate in common the natural endowment and conditions; and from these rise up into the larger acquired established rules and principles, and agree at last in the spread out and extended expression.

It is entirely unnecessary before this body of intelligent and skilled minds to review and present what is the natural endowment and condition of the mass of protoplasm, or the germinal cell, save to say that therein do we see in its primitive type every energy, function and structure that later we find in larger and more extended expression in the normal or standard type, but for our purpose it becomes necessary to trace the mode, method and causation of this; for therein is contained that to which we wish to refer and especially emphasize, namely, the element of habit in gynecic disease.

First, we affirm, and have elsewhere in a suggestive way more elaborately presented, that the energy at work in the primitive type is chemical, and is a direct transmutation from the energy of heat operating upon known forms of matter under conditions that have passed from inorganic to organic—these conditions characterized by an independence or freedom under appreciable laws; these being the law of continuity conjoined with the law of conservation of energy. So that, given chemical energy under these conditions of freedom or

independence operating under these laws of continuity and conservation of energy upon definite elements or forms of matter, the product is protoplasm. This is the causation.

The mode and method are evolution and its conditions under law.

This implies that in the product, protoplasm, the primitive type created by the cause assigned, we must have the germ of every form of energy or activity that may subsequently be manifest in the acquired normal or standard type. The law is the same as for causation—that is, continuity and conservation. Hence to the mode and method, evolution and its rules and principles, previously termed conditions, at work under the primary laws of continuity and conservation, in conjunction with chemical energy and its manifest and latent potentials, under the same laws must we assign the products, functions, and structure. The necessary product from the first, therefore, being protoplasm in primitive type, from this in conjunction with the second, we must have a still higher product, the germinal cell, and from this, as the name implies, obedient to the operation of the same causation, mode and method, and the persistent application of the laws of continuity and conservation, find a product of larger and more complete expression, the differentiated cell, and from this the acquired fully expanded and spread-out expression, the human organism, with all of its contained activities, functions, and structure. In short, the normal or standard type.

We affirm, therefore, that the natural endowment and conditions are found and correctly appreciated only in the primitive type; that the normal and standard are an acquired, extended expression and fulness of these; that causation, mode, and method being under law and productive of the primitive type, so also on account of law must the normal and standard, the acquired and extended type, be a product of this natural endowment and conditions, and must be obedient in all activities, functions, and structures to the same law and order.

From this we can, without further arguments, state our second proposition: that from the primitive to the normal and standard type the laws of continuity and conservation must hold true and be ever present and in conjunction with chemical energy, operating through evolution, and its conditions stand in the relation of causation, mode, and method for every activity, function, and structure that may find expression in the progression from one to the other.

The law of the conservation of energy, briefly stated, declares that

the sum of all the energy in a system remains constant and is unaltered by any transformations arising from the action of one part of the system upon another, and can only be increased or diminished by effects produced on the system, by effects from external agents: in short, a question of quantity.

On account of the position taken it is apparent that as far as the primitive type is concerned in the effect observed in relation to causation there is no change; it is still in the progression to the normal and standard, chemical, and in all the transmutations, as into heat, sensation, assimilation, digestion, excretion, or reproduction, there is no change in the sum of either individual or collective energy. They are fixed, and for its system unchanged. There is change in structure, and this alone; but in each do we find the exact reproduction of the primitive type. This, as before implied, is due to the rule and principle of evolution, but involves no change in the law of conservation. The product contains no more energy or sum, and is not altered by any transmutation in it, and there are no added transmutations of energy except what were in the original. It is the exact pattern and type. Evolution calls this conformation to type; but evolution is the mode and method of the product; we are dealing with the causation and the product itself. It is the operation of the law of the conservation of energy, necessitating a mode and method in conformity to what preceded. Parent and progeny are and must be exact and alike in all details and generalities, continue and extend the process, and under law every parent to every progeny will be alike indefinitely.

The word habit comes from *habitus*, meaning state, dress. Do we violate any law of logic or reason when we identify the above progression from cause to effect by saying that herein do we find the element of habit in relation to protoplasm? We think not, and state our third proposition, that the law of conservation of energy operates and necessitates the operation of the element of habit.

The law of continuity declares that nothing passes from one state to another without passing through all the intermediate states. Such being the case in the progression from the primitive type to the acquired normal or standard type, the law of the conservation of energy must pass to the normal and standard, and operating therein must necessitate the operation of the element of habit.

The element of habit we conceive, therefore, to be that state or

dress of protoplasm manifest and observed in any and every stage of the progression from primitive to the acquired type, as related to energy, function, and structure, which insures the repetition or recurrence at any given point in the progression of the attained energy, function, and structure typical of the stage selected. In causation this is chemical in its varied potentials. In mode and method it is the law of natural selection, and, mark you, selection not simply in structure, but also in energy and function.

Having traced causation, mode, and method in the natural endowment and conditions, identified them therein, shown their presence in and from primitive to the standard type, stated the laws of conservation and continuity, and shown their operation and necessity therefor, identified the element of habit not only in the primitive, normal, and standard types, but its necessary presence in each and at every point in the progression from one to the other, and this necessity and operation being due to the influence of the laws of continuity and conservation, and shown that the element of habit is not only found in relation to causation, mode, and method, but necessarily passes to the product itself, protoplasm, and is found therein and in relation to energy, function, and structure, obedient to the same law and order; the element of habit must, therefore, be persistent.

This leads to our fourth proposition, that the law of conservation of energy operating in conjunction with the natural endowment and conditions—namely, evolution—insures persistence of the element of habit, due to the operation of the law of continuity, and not only must be found in and through the progression from the primitive to standard type, but also in every and any variation that may occur.

From the foregoing it is evident that in the further consideration of our theme we are confined to that position which considers disorder or disease, be it gynecic or otherwise, as a variation in type, in relation to the natural, normal, or standard, and that this variation is not simply that of structure, but also of energy and function. If we apply this to the standard organism or the so-called normal, we do so with a certainty of landing into complexities and confusions that are unending and lead to inconsistencies and contradictions. If we bear in mind the meaning of words, as natural, normal, and standard we at once see that we must turn to the "natura," the natural, in order to find common and sure footing in our conception of variation in type or disease. This may seem simple, unscientific,

but certainly the natura is the thing itself, is omniscient and omnipresent, and we challenge the objection by saying that it was only when the medical mind evolved the departments of histology, microscopical pathology, and bacteriology, that light was manifest and our knowledge of real utility.

Furthermore, we know that the only possible means that are capable of accomplishing a variation in type is that law of evolution termed "change in environment." If this is to be applied either in theory or practice to the normal and standard type we are thrown back into the mysticism and empiricism of the "Dark Ages" of medicine, and are compelled to comprehend cause and effect by symptoms; these may be real or counterfeit. Keeping in mind, therefore, that we are dealing with energy, function, and structure, as expressed in the primitive type, we state our fifth proposition—that disease is a variation in type acquired by change in environment operating on the primitive type, and that this variation and effect of change in environment is not simply in and on structure, but also in and on energy and function.

This leads to another concept, viz., that an absence of change in environment insures a persistence of the *natura* or the acquired type, and necessitates a persistence in progression of the type acquired through the stages of evolution to which the organism is or has become adjusted. We perceive, therefore, that the element of habit is and does become a potent factor, and that it is not only to be found in the "natura" in relation to the primitive type, but also in the acquired, be it normal or standard, and in relation to those conditions termed health or disease.

In the application of the foregoing we must keep in mind that it is in relation to energy and function, as well as structure, that our concept is to be utilized. This may seem an unnecessary refinement in diagnosis. Yet without it we gain nothing in reconciliation of apparent contradictions and explanation of the enigmas of our experience.

Who of us is not familiar with those general divisions of disease called functional and organic, and does not feel in the attempt to explain and point out differences that only a part of the phenomena is accounted for. Who of us has not witnessed those gradual modifications and alterations under the effect of some external or foreign agent in which structure or function may or may not be

involved, and yet all the symptoms of the most intense organic change be manifest, have sought and not found; and who of us has not done careful and effective work in removing evident causes for evident effects, and been nonplussed at the persistence of the phenomena we believed would disappear. We believe the difficulty lies in the fact that we have been contemplating structure; that we have not comprehended the "trinity" of the human organism, energy, function, and structure, and have not recognized the possibilities of a variation in type within the limits of the freedom or independence possessed by each in its relation to the others, as well as without. Take, for instance, the first, energy. This we affirm is chemical. Witness the lithemic condition. What mild or protean phenomena may be evolved from this chemical variation, and how long it may continue with only a variation in function. Witness the drugging (morphine, chloral, cocaine, alcohol) the human organism has sustained, and how long continued this may be and the structure remain intact. For function, witness the over-exertion, excessive changes in environment, abuses and excesses in all directions of function and energy, and structure remain typical and competent. For structure not so much can be allowed, but observe the hypertrophies, hyperplasias, and atrophies, and not quantity, but type and competency remain. And what part or locality in the human organism furnishes greater possibilities or is richer in observed phenomena in any of these than the gynecia? Here, as not elsewhere, in the primitive, normal or standard type is observed continuity, conservation, and evolution from the simple primitive undifferentiated up to the completely expanded expression, working out the progression with a marvellous capacity and reserve in all its adjustments, fulfilling law and order in its widest and most exacting demands, to complex differentiated expression of the trinity, abiding for a season, thereby insuring persistency in law and order and type; thence back again; obedient through all to continuity, conservation, and evolution—a poem in energy; a symphony in function; the culmination of a cosmos in structure. And yet there are men in the highways and byways in this day of light and possible liberty from error whose concept of gynecology is a speculum; a probe; absorbent cotton and iodine; a pessary; a knife; electricity; drugs; an idea; or authority.

In order that we may avoid misconception and confusion in considering the argument, the element of habit from what has pre-

ceded is defined as the adjustment of any one or all the elements of the trinity, energy, function, or structure to the circumstances or conditions operating or quiescent at any given time. It is not the causation, mode, or method, but is involved therein; is not the law of continuity, conservation, or evolution, but a sequence thereof; being an adjustment in and due to the above at any given time in circumstance or condition of protoplasm, either as primitive, normal, or standard type, it remains in our application to show how this is manifest and accomplished. In this we do not consider it necessary to review what you all have observed, and no doubt appreciate in that condition called health, and are acquainted with the variations in type within the limits of the condition, health; but to transfer this whole plan and argument into the domain of disease in every detail may not at first seem correct; yet this is precisely what we must do if we accept law and order in the universe, conceive disease to be a variation in type, and believe continuity, conservation, and evolution as laws in relation to causation, mode, and method, necessarily passing to energy, function, and structure. There must be analogy (we use the word with its specific meaning) or contradiction. If analogy, then truth. If contradiction, then error. We have said that disease is variation in type; this implies change in environment. Look to bacteriology. Here we have presented organisms analogous in all respects to the human organism as far as being a part of the same cosmos, with a natural endowment, obedient in causation, mode and method, energy, function, and structure, to the same general laws in which the culmination in expression is to a *natura* moulded for and adjusted to the same objective point—self; but whose mould and adjustment is a variation in type in its trinity from that of the human organism. These coming into relation with the *natura* of the human organism (and if we had continued observing the acquired normal standard type they would be still unknown), made possible by the analogy, there is accomplished a change in environment to the *natura* of the human organism, and this change in environment is not simply to the structure, but to energy and function, and as a result of this change there is and must be a variation in type in the *natura* of the affected organism. This variation may be confined to one, two, or all the of the elements of the trinity. Where energy is simply modified there may or may not be any modification in function or structure. It may be transient or sustained, and may

not pass beyond the confines of the capacity or reserve which needs nothing else to dispose of or tolerate the variation. In this variation we place the benign and some possibly pathogenic organisms, and find by this that our analogy carries us direct from health to disease. Passing from the pathogenic organisms that may at some time accomplish only variation in type in energy to those that always do, and that in a degree beyond the freedom for individual variation in type, we fully enter the domain of disease and find the continuity of the progression unbroken and the conservation in energy absolute. Accomplish the change in environment as you may, either by direct contact of organisms—agents operating upon the acquired type through the mental, nervous, muscular, excretive, secretive, digestive, assimilative or reproductive tracts, or by agents chemical or physical—the modification is received and spent on and at the *natura*, and the effects accomplished may or may not be transient or sustained, and the variation in type in energy can be likewise traced into and from the condition termed health into the condition termed disease, and not a break found in continuity and conservation, and not a single rule or principle of evolution violated. So, also, study function and structure; but time forbids. We think it correct, therefore, to say that change in environment produces variation in type. We see that disease is due to change in environment, and that it invariably affects the nature of the human organism either in energy, function, or structure, or in all, and consequently is variation in type.

It is manifest, therefore, if we apply this variation to structure we have only organic disease comprehensible with always function and energy involved. This we know is not true if applied to the acquired normal or standard type; it may be true if applied to the *natura* or primitive type, but only in relation to each individual cell affected, for we know that structure may be seriously modified in the first, energy and function remaining typical and competent. Apply this to function, and we comprehend functional disease with or without variation in energy and structure. If applied in relation to the acquired type we have no means of differentiating when energy and structure vary and have no conception of the possibility of the disorder passing from the domain of the functional to the organic; applied to the primitive type this is readily appreciated. Apply the variation to energy at work in the *natura*, and conceiving all the various activities of the

acquired type as being transmutations from this, and much of the now incomprehensible functional domain becomes clear, immunities from and predispositions to disease are explained; acquired modifications once experienced are tangible; soil, diathesis, resistance are appreciable, the mysticism and ignorance involved in the neuroses is largely brushed away, slight ailments will obey attention, hysteria, neurasthenia, hypochondriasis, many forms of melancholia and a host of disorders that the careless medical mind attributes to the "fool patient" will become realities. The possibility of a variation from the condition of health to that of disease, and that, too, without any appreciable cause from without, will become manifest; and while we at this time cannot give the variation in formulas, and may not be able in all cases to correct the variation, we can, until this field has been better explored, in hearty accord with our German colaborers, make a more correct diagnosis and dam the therapeutics.

Appreciating disease as a variation in type, we present the last point in our argument, and that is, that the possibility always exists in disease as well as in health for the variation in type to become fixed or adjusted in its relation to the *natura* and its trinity, to such a degree that it is more or less persistent.

This necessarily implies a persistence of the change in environment more or less perfect, and so long as this more or less perfect persistence of the change is operative there can be but more or less operation of another principle of evolution, that of atavism or reversion to the original type, and consequently the disorder must be more or less persistent and appreciable. The conclusion we reach from this is that habit, being the state or dress, or adjustment attained in the natura, either in one, two or all of the elements of the trinity, it necessarily must pass to and be present in disease and be one of the elements in pathogenesis, pathology and pathisotherapia.

In illustration and for the practical part of our paper, we wish to present the following, the first of which is variation in type in relation to energy.

Miss A., aged twenty-five years, school teacher, five feet four inches, weighed one hundred and fifteen pounds, catamenia at thirteen years, always more or less trouble, and for six years sufferings severe, rectalgia more or less continuously, malaise, and fatigue persistent, constipation, cephalalgia of top and back of head, vertigo at times, gastric disturbances slight, but explosive at times during menses, heavily coated

tongue, skin flabby, but not anemic in color, uterus in complete retroversion, density greatly modified, so much so that flexion can readily be produced in any direction; no evidence of any structural change save slight enlargement of left ovary, and moderate fixation of right easily released; no history of any inflammatory attack at any time and no discharge save at menses. This is normal and of good color. The dislocation is marked, the uterus, at first examination, was found impacted between the utero-sacral ligaments which was readily relieved. The patient declining operation, a pessary was introduced, well fitted gave no discomfort and apparently relieved the relaxation manifest at cervix. This patient has been under observation now for over a year, and only during the last four months has there been any evidence of improvement in the relaxation and persistent flopping of the uterine body over the upper arm of pessary. Every means possible was utilized, all symptoms met, tonics and the etcetras of the gynecological armamentarium were exhausted and no appreciable benefit attained The environment was pernicious, monotonous, effective, and the variation in type was likewise persistent. It was not until we comprehended that this was in energy did we find the key to the situation; structure was certainly unchanged, function was to some extent, but when considered in relation to the *natura* it was not, the type was there, but the power for active function through structure was not there. Considering, therefore, that the variation was in energy we could find nothing to fit the case unless it was that the chemical modification was that of lithemia. Acting upon this, and persisting for three months, we were rewarded by the first and only evidence of relief, that of general systemic well being and decided improvement in the relaxation of the pelvic tissues, to the extent at this date of a more normal density of uterine tissue, and the pessary now sustaining the uterus in position. But all along the reversion to the original type there was and is now a more or less constant tendency to return to the full expression of the variation. This we consider the element of habit. The adjustment of the *natura* to the variation has been so long in operation, so fixed, that in spite of the activities at work, by presentation of changes in environment within the limits of health toward this end that it is continually showing itself. The law of natural selection has passed from the limits of health to the domain of disease, and is at work in the new adjustment, and we expect to have to contend with this element of habit until such time as the

environment for health shall have been in operation so long and forcibly that the *natura* has been brought back entirely to the adjustment of the original type, and the element of habit for disease become the element of habit for health.

Variation in type in relation to function in pure and simple expression is not frequent but is usually met after variation of energy and structure has complicated the process, standing in relation of cause to the former and sequence to the latter.

The following case illustrated with considerable degree of purity the type:

Miss M., aged twenty-seven years; single; brunette; five feet four inches; weight one hundred and fifteen pounds; gives clean bill of health up to twenty-one years of age, at which time, following severe mental and physical strain, began to have leucorrhea, backaches, gastric reflexes, cephalalgia; pains the day before first day of flow, gradually changing to three days before and the several days of the period, save at the menses and the leucorrhea; feels perfectly well, capable for her duties and enjoyments, and would to the casual observer be considered a healthy woman. Examination of the gyneciæ revealed nothing tangible or without the domain of health in relation to structure or energy. But at the menstrual epoch the picture was radically changed; there were hyperesthesia, decided enlargement of uterus and ovaries, mobility diminished, and all the evidences of general pelvic stasis and hyperemia, in short, the type was congestive; here, with energy typical and competent, structure unchanged, the action of function passed far beyond the type, and we had all the phenomena of the first stage of an inflammation.

The variation in type had reached the point where energy was beginning to yield, and this accomplished, structure would not be long in joining in the progression.

Those who have had this type to deal with know full well the fixed character of the variation, how the tendency to recurrence is frequently exhibited, and how slight changes in environment send the subject back again and again. Here do we see the element of habit.

As illustrating variations in type as related to structure, we point to the traumatisms and lesions accomplished after long-continued operation of variations in type of energy and function. Particularly is it observed in that class who have gone through long experiences

of organic disturbance, in which evolution in structure has been accomplished which in many instances remain more or less permanent. Even in those in which reversion to the original type has been most perfectly accomplished, do we see manifest repeated and persistently recurring attacks in which the type is again and again more or less fully expressed, and that, too, in the absence of the specific agent that at first produced the variation. This we consider the element of habit responding to the variation in structure. The new state, dress, or adjustment is repeatedly showing itself on account of the persistent change in environment maintained by the variations in structure. We wish it understood that in this we do not lose sight of the active specific agents that in beginnings and for periods afterward, and possibly to the end, stand in the relation of cause to effect, but these die out, are disposed of, and leave sequences. These sequences are the variations in type in structure which may or may not pass away that we note, and those in this type are the real factors that keep in operation the new adjustment and the element of habit.

For witness look to the hypertrophies, atrophies, hyperplasias, adventitious and heterogeneous changes in structure, and study the element of habit therein. Who has not observed the aches and pains; the functional activities, the recurrences, the lapses from apparent states of health to disorder, after more or less continued experiences of disorder, and after the removal of apparent causes and conditions for the same; the radical therapeutics of the day, and in most instances the gradual and final reversion to the original state and condition of health? How many sensations, aches, and pains we meet; the persistence of the menstrual flow and molimen, when we know beyond doubt that the agents for their activities have been absolutely done away with. How often we see the gynecia after prolonged disorder become restored to conditions that the skilled sense of touch knows is within the domain of the normal or standard type, when without some reasonably sufficient cause the swing back into the domain of the previous experience is so sudden and aggravated that the observer is nonplussed. These and all kindred cannot be interpreted or comprehended, save but by the element of habit; and in the progression of disease during the active stages the host of experiences and evidences that are readily reconcilable and can be intelligently explained are many, and, correctly appreciated, lead to safe therapeutics. Appreciating the element of habit in health, and its possibility and pres-

ence in gynecic disease, and comprehending the entity to be a variation in type, either as related to energy, function or structure, one, two, or all, and these as related to the "natura" of the organism affected, obedient to continuity and conservation, we are led in the solution of the problems presented to the rules and principles of atavism or reversion to the original type.

DISCUSSION.

DR. A. VANDER VEER, of Albany.—Mr. President: Time will not permit me to discuss this valuable paper at length. It is the kind of paper which should be read by the general practitioner who turns aside ruthlessly his patient and says, "you are only nervous." The habit is established, but if you can remove the cause it will invariably result in the restoration of the patient to the normal condition, bringing her about to the true relation that she bore in early life. We can read this paper later on, and learn much from it.

DR. W. E. B. DAVIS, of Birmingham, Ala.—Just a word on Dr. Hulbert's paper, and that is in reference to the want of satisfaction we get in operating on nervous cases for local trouble. Patients are operated on and their nervous symptoms are not relieved, and it takes many years to cure them. On this account complaints are made against the operation. The surgeon should be very guarded in his prognosis in such cases. When the minor local disease has been operated on, only a small part of the patient's trouble has been removed, and not the most important part by any means. The neurologist should have charge of the majority of these cases.

REMARKS ON INTESTINAL ANASTOMOSIS.[1]

By J. B. MURPHY, M.D.,
CHICAGO.

I THANK you very much for this invitation, but it is not so much to exhibit specimens from experimental work as to direct your attention to a few facts in connection with intestinal anastomosis that I address you on this occasion. I had hoped that Dr. Davis's paper would be read before making this presentation. However, I will direct your attention to some points concerning intestinal approximation. I have jotted down a few notes in connection with the operation. The first thing that we desire in all intestinal approximations is immediate adhesion, and this comes as the result of uniform aseptic approximation. While union is taking place we also desire sufficient space for the transmission of the contents of the intestinal canal during the formation of the definitive union. Then, following the adhesion, comes organized union as a result of approximation; after a certain length of time we have an organic union that is to maintain the permanent approximation.

Then, after we have permanent union, we desire also to have an opening which will remain sufficiently large as long as the patient lives. During the process of repair in intestinal approximations accidents occur. Adhesions form about the seat of inflammation that produce obstruction by the formation of an angle at the place of approximation, or by a loop of intestine close to the seat of approximation, from which the patient may die. This may be avoided by producing as little irritation of the peritoneum of the bowel which is approximated as possible. Now, the questions arise, How can we accomplish this purpose best? How can we produce these results? Every operation in the peritoneal cavity must be performed in the shortest possible time consistent with good work. I think this is all important. One of the number said yesterday in debate that we should not use a watch

[1] Reported stenographically.

in these operations. It is our duty to keep watch on every surgeon. The older Fellows of the Association will remember that when anesthetics first came into use surgeons thought nothing of consuming two and one-half hours in doing a laparatomy, so that the patient's condition was very bad when taken off the table. The patient was in collapse, was depressed with prolonged anesthesia alone.

What was the condition of the bowel exposed for that length of time? It was excoriated; the endothelium was abraded. All these points must be taken into consideration. Show me an operator who gets his patient off the table in rapid time and in good condition, and I can show you an operator who has success. His patients will get well. The element of time, therefore, is an important factor in all operations of approximation of the intestine. The caliber of the bowel must be maintained. The scar must be one that will not contract. This is an important thing, and it is what I desire to call your attention to more than anything else. You know that the element of contraction in this work has been the bugbear of surgery. To what is the contraction due? To cicatricial formation. What do we desire to avoid? Cicatricial formation. Let any man study the history of vesico-vaginal fistula, and he has the history of intestinal approximation exactly. Make a simple incision from the vagina into the bladder, and it will close if you do not employ means to keep it open. If the vesico-vaginal fistula be produced by sloughing, difficulty will be experienced in closing it. True it will contract in size in proportion as the bladder contracts when permanently drained, but it will not close. Herein lies the explanation of contraction in lateral approximation, where we have one portion of the intestine approximated to another. By simple incision this opening will contract in the majority of cases if we allow the edges to appose each other as we do by approximation plates and suture. But where we top-sew the edges we lessen the contraction. In all suture operations of the intestine, that is, where the Czerny-Lembert suture is used, what kind of scar is produced? By this suture we produce immediately invagination of a portion of the intestinal wall into the canal, and it lessens its caliber. That is the immediate result. I may say that it lessens the caliber of the canal enormously, which you will find demonstrated in this specimen, sent to me for exhibition by Dr. J. A. Crowell, of Iron Mountain, Michigan. We have an inversion of the portion of the wall between the Czerny and the

Lembert suture usually one-quarter inch. What other condition does it produce? It produces a cicatricial mass extending from the Czerny to the Lembert portion of the suture, including both. We have thereby a large surface approximation, and we have a thick scar. What is the result? Contraction. Contraction is the result of every suture that we put in of the Czerny-Lembert type or double row of sutures in which there is approximation of the viscera. That is the primary result, and in proportion to the amount of cicatricial formation there will be permanent contraction. It is something which we must always avoid. The same is true of all forms of approximation plates.

I now desire to call your attention to the specimen sent me by Dr. Crowell. This specimen is the intestine of a dog. There were two operations done on the same dog by the same operator on the same day. The doctor wrote me a letter stating that he had such a specimen, and I asked him kindly to send it to me. Here you see is the approximation with suture, and there (illustrating) is the thick cicatricial band which occurs with the Czerny-Lembert suture, which is felt by taking hold of the intestine in the manner in which I show you. The intestinal walls protrude into the caliber, and there is a mass of cicatricial tissue within, and precisely at the same point there are adhesions of the omentum around the outside. I will now take the other end, around which I have tied a string, in order to be able to find the seat of approximation with the button. The first operation was made with the suture, the second was made with the button on the same dog. Let us find the approximation. Here you will observe the white line of union; it is impossible to recognize it in any other way. This was the condition twenty days after operation. I will pass the specimen around. You will have to inspect it carefully in order to discern the line of union produced with the button. Here I show you a piece of bone that had been retained in the bowel above the seat of approximation with the suture. I should expect that piece of bone would be stopped by the button as well, as it could not have passed through its caliber, and I am happy to say that our patients won't feed on bones immediately after operation. (Laughter.)

How can this invagination be avoided? Every method of approximation that we have had up to the present time involved a lateral approximation of intestinal wall, even Denan's rings. The tissue came around the rings in the manner which I show you, and was cut

off at this end. What is the difference between that and the approximation with the button? This is the particular point which I wish to emphasize. We have here a mechanical contrivance to accomplish this purpose. What is the purpose? We desire to produce a juxtaposition of similar histological elements in approximation, *i. e.*, an edge-to-edge union of the wall. With this form of union it matters not what tissue, whether in urethral, intestinal, or in any other tissue, it will not contract. If we have a juxtaposition of similar histological elements, regeneration of tissue takes place across the line of union. We have normal tissue regenerated producing the union, whereas we have with the other devices cicatricial tissue adhesion. How does the button accomplish this? By pressure. The button presses the parts together, and the most vascular tissue gives way under pressure first, that is the peritoneum. The next tissue which gives way is muscular fibre, and finally the tunica propria, and each as it is separated from the part folded into the button unites across the line of union. This is the only method so far devised by which the coats of the viscera are approximated edge to edge. With sutures it cannot be accomplished; we cannot sew the edge of the tissues together in that way; the edge-to-edge union must be produced by pressure-atrophy. We have a history in lateral approximation the same as in vesico-vaginal fistula. We produce pressure-atrophy. Take out a portion of tissue, and the scar will not contract. It will contract only in proportion as the viscus contracts of which the opening is a part.

Dr. Keen, in his first able review of the button, in which he speaks particularly of the contraction, forgot to mention that the intestine above the seat of obstruction before the operation was a dilated canal. What became of that dilated canal? It contracted down to the normal size of the intestine, or less than one-third of its former size. The opening contracted in proportion to the wall of the viscus. We have that same contraction occurring where we have a dilated stomach from an obstructed pylorus. We insert a round button, and the opening will contract in proportion as the wall of the viscus contracts.

Here is a specimen which I present to you from a patient on whom I operated on October, 1893, nine months previous to its removal. This is the first specimen of lateral approximation that I have been ble thus far to obtain. I operated for fecal fistula. The fistula did not close. There is no mention of this particular case in my

recent article, as the manuscript was already in the hands of the publishers when I sent it in, and it was too late for insertion. At the first operation I made an approximation with the button; the button was not found, and the fistula did not close, but continued discharging, and the patient was in a bad condition. I was determined to find out what was wrong. I made an incision around the fistula, liberated the adhesions down to the peritoneum, then made a linear incision along the inner side, put my finger around, and found that the adhesions were circumscribed. I cut them loose and drew out the wall of the fistula with this intestinal attachment. The patient had had a vesico-vaginal fistula also; the distal portion of the intestine came around to the vagina; the parts were so adherent in that position that they came down in two loops. Here I had made my approximation, relieving one adherent loop, but had not observed the other loop, which was also adherent and discharging at the fistula. Of course, the fistula continued to discharge, and would have continued to do so under the circumstances indefinitely. At the second operation I cut off the bowel, took out a coil of intestine which measured twenty-five inches, made an end-to-end approximation, and ligated the mesentery. It is in lateral approximation that the greatest contraction takes place with the suture. I here present this specimen. If you will hold it up in this manner, you will find the site of lateral approximation showing nicely on both sides. Here is one coil, and there is another at that point. The lateral approximation is from there to there. You cannot feel the line of approximation. The opening was made with a button which measured three and one-half inches in circumference, which is the largest of the ordinary set of three sizes. The circumference of the opening, nine months after approximation, is five inches. This enlargement is due to two causes:

1. The puckering-string draws in a greater area of the bowel tissue than the real circumference of the button.

2. The bowel in this case was somewhat enlarged by the continuation of obstruction below after the primary operation. The first button was not found in the intestinal tract, which showed that it had passed without being observed by the patient. The second was removed from the rectum on the twenty-eighth day; patient made an excellent recovery, and is now in perfect health.

The approximation was, as I claimed originally, ideal, there being

an edge-to-edge approximation of similar tissues. In short, there can be no more perfect approximation of similar histological tissues.

Obstruction by the button. Will the button produce obstruction after it has liberated itself? I have not had a single case of obstruction produced by it reported to me in all of the cases which I have had up to date—namely, one hundred and twenty-nine operations with the button, and not one obstruction. Has the button been retained? Yes, in one case which I heard of in an indirect manner, it rested in the stomach. Why that should occur I do not know, unless the bowel below the button atrophied from continued obstruction. Has the button been retained in the ileo-cecal valve? Not one single case has been reported up to date. It has been retained once at the head of the splenic flexure of the colon by adhesive bands. It has been retained lower down in the sigmoid flexure by a secondary carcinoma in one case. I cannot give you the number of buttons that were not found. I have tabulated the recent cases —*i. e.*, those which occurred since my last report, and which will be published in a short time, with the name of every operator. In reporting cases it is our duty to give the name of every operator, his results, and the date of the operation. This I consider the most valuable method of reporting, as the reader has an opportunity to analyze the results. I am pleased to be able to report to you this morning one hundred and twenty-nine cases in this tabulated form, which I here present.

Another point. Has the button itself been obstructed? Since I came to this meeting I have learned of one case which occurred in the practice of a fellow of the Association, Dr. Macdonald. At the post-mortem hardened feces were found impacted in the opening in the button; it was a case of resection of the small intestine. I can scarcely conceive of feces being impacted in the opening in the button so firm as to resist the propelling force of the bowel without rupturing the line of adhesion. This danger can be easily obviated by the administration of a saline or ox-gall cathartic; I prefer the former.

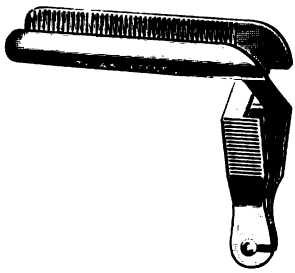
Again, do we get failure of union? Do we get advancing pressure-atrophy (so-called gangrene) beyond the line of pressure? I have yet to see a specimen of a single case of that kind. We have had non-unions, and in all such cases, I think, with possibly one exception, and that specimen I have not seen, the non-union was due to pus-infection from without. It makes no difference whether we use the

suture, the button, or bone-plates, we will have failures of union in pus-infected cases.

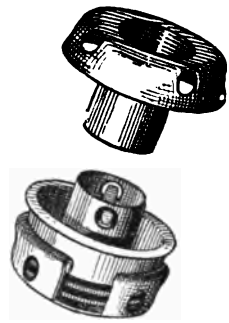
The results with all methods of operations on the intestines will never be perfect. Intestinal obstructions will have a great mortality but what we desire, and what I have endeavored to bring out in these remarks, is the condition or conditions we find in the abdomen post mortem in operated cases. It is the cause of death we want to discuss, and not the mere fact that the patient died on the fifth or sixth day after operation. In a case of strangulated umbilical hernia of forty-eight hours, which I saw in a hospital a short time since, no other operation was done except liberating the obstruction, and the patient died within a few hours. We want to ascertain why they die—whether it be due to faulty operative technique or to other causes.

I have jotted down a few notes on various operations with the button: cholecystenterostomy for cancer, 5 operations, with 4 deaths; cholecystenterostomy for cholelithiasis, 35 operations, with 1 death —the patient who died in this case was one in which there was fatal hemorrhage from lacerated adhesion of the liver; resection of the intestine, 64 cases, 5 deaths—3 from shock, 2 from peritonitis—59 recoveries. These cases have occurred since my original report was made: lateral approximation, 2 cases—1 death, 1 recovery; gastroenterostomy, 20 cases—5 deaths, 15 recoveries. Even with this result I do not consider the operation of gastroenterostomy justifiable, except where we have a small carcinoma in the very early stage. When we have that we can make some effort at saving the patient's life by resecting the carcinoma; without resection I do not perform the operation. (Here Dr. Murphy demonstrated with his button the *modus operandi* of making an end-to-end approximation.)

For operations on the rectum and the larger intestine I have devised a larger button (one and one-quarter inch in diameter), which may be used in operations upon these parts. Where we have carcinoma obstructing the sigmoid flexure or transverse colon at the splenic side we will have the proximal end dilated and frequently thickened. If the latter condition exists, we may find it difficult to get the bowel into the clasp of the ordinary button. I always make it a rule to examine the rectum in cases in which the button has not been passed within ten or twelve days after operation. It may be found just inside the sphincter after it has passed into the rectum.

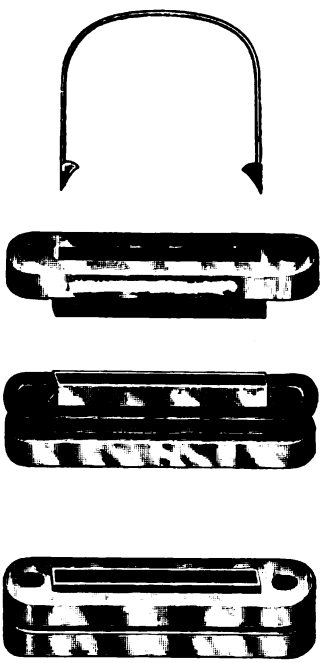


Murphy intestinal clamp.

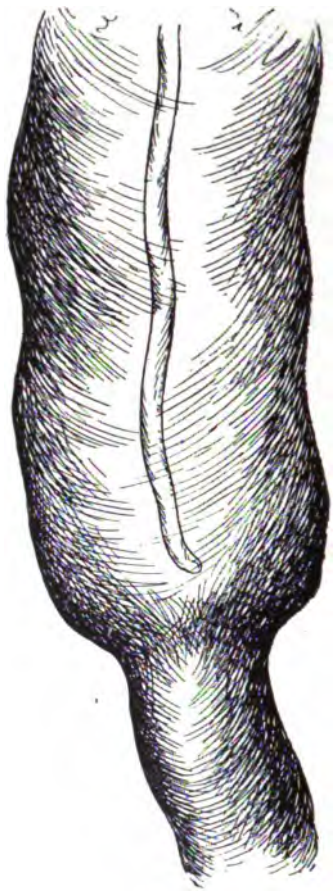


Circular button, for end to end and side to side.

Method of performing cholecystenterostomy.



Oblong button for lateral approximation.



№20.

End to end, of ileum to colon.

It will pass freely along in the large intestine except where there is some organic constriction or pathological condition, which I mentioned and upon which I laid particular stress in my first paper.

Chaput, of Paris, has conducted a series of twelve experiments with the largest button on the cadaver, and its passage was difficult in ten cases. He expressed fear that it might obstruct in the living patient; and yet I have had reported to me up to date one hundred and fifty-five cases without one single obstruction having been produced by the button. I consider this sufficient to silence that objection. Every surgeon of experience in intestinal work knows that as soon as the intestine is obstructed in the *living* patient it rapidly dilates, and in a few hours measures more than double its normal circumference. Where the obstruction is gradual it may exceed three or four times its normal circumference. This explains why the button is not retained in the living intestine, while it would be difficult to pass it through the intestine post mortem.

DISCUSSION.

DR. A. VANDER VEER, of Albany.—At the meeting of the Medical Society of the State of New York last February I gave a strong indorsement of the Murphy button, saying that the contraction which resulted from bone plates and other devices was disappointing; also that the length of time required in doing the ordinary end-to-end anastomosis by means of the Lembert suture or any modification of it was a long operation, and that unless we had some substitute for bone plates, rubber, and catgut rings, we would ultimately return to the old operation of doing it without any mechanical means whatever. Soon after indorsing the Murphy button an elderly patient came under my observation in a feeble condition, and the case was one for intestinal anastomosis. I took advantage of this opportunity to use the button, and the case illustrated what Dr. Murphy brought out in his excellent remarks.

Regarding the specimen, most of you can see the contraction at the pyloric end of the stomach. The specimen was removed very hurriedly, and I could not personally attend the autopsy. It is the easiest of any operation I have ever undertaken. We have an illustration of perfect union; but the patient died on the fourth day from exhaustion.

In another patient, sixty years of age, with cancer of the sigmoid flexure, I did a resection and had very little trouble in bringing the ends of the intestine together, using the largest sized button in my possession, and when the edges were brought together the apposition seemed perfect. I felt the button resting under the crest of the sacrum, and was afraid it was going to lodge at that point. I loosened up the adhesions, placed the gut in as free a position as possible, but at the end of forty-eight hours obstruction presented. I liberated a coil of intestine and afforded relief in that way. Union took place at the point of junction, and the button was impacted in the lower portion of the rectum. This patient ultimately died of exhaustion, but we found the button lying just within the sphincter absolutely free.

These were not, in many respects, good cases for operation.

RESTORATION OF INTESTINAL CONTINUITY WITHOUT MECHANICAL DEVICES.

By W. E. B. DAVIS, M.D.,
BIRMINGHAM.

So much has been written recently on the subject of intestinal surgery that I hesitate to add anything to what has already been said. Conclusions have been drawn from many experiments on lower animals by surgeons of experience and by others anxious to gain reputations as abdominal surgeons. Enthusiasts for special operations and for special devices have claimed for their special technique and operations more than has been sustained by the experience of unbiased workers. It is not the purpose of this paper to claim originality for any special technique or operation, but rather to consider the various operations and to show that mechanical devices can, in the great majority of cases, be better dispensed with by the surgeon who has had much experience in intestinal work, either on lower animal or on the human intestine. Still there is a place for the anastomosis bone plates, catgut plates, and other devices of this sort, especially the Murphy button, but the experienced surgeon will find the field of their application very limited. These devices are of great assistance to the surgeon of limited experience in this class of work, and should be recommended in the event of an operation having to be done by one who has not had the opportunity of becoming skilled in suturing the intestine. The Murphy button is a valuable device for cholecystenterostomy, and is superior to anything yet suggested for that purpose. The button is so small that it can pass through the intestine without causing any trouble, and it can be depended upon with almost absolute certainty to produce satisfactory adhesion and a competent opening between the gall-bladder and intestine. Still, as I have stated in a paper read before the American Medical Association, I believe this operation has but a limited application: that in those cases where

there is a stone in the duct that the duct should be opened and the stone removed, and thus the continuity of the duct established. But this paper does not deal with that part of the subject, and I would refer to my remarks in *The Transactions of the Southern Surgical and Gynecological Association*, vol. vi., 1893, for a more complete discussion.

It is pretty generally conceded that the contraction after anastomotic operations on the intestine will ultimately be at least one-half the original opening. So in doing anastomosis this must be borne in mind, and an operation which does not make the connection sufficiently large to allow of this amount of contraction is not to be recommended. The Murphy button will not accomplish this, inasmuch as it cannot be larger than the caliber of the gut, and the Senn bone plate cannot be made large enough for that purpose. The catgut plate of J. D. S. Davis may be made of any size, inasmuch as it is cut from catgut disks of large size, but it is not equal to the stitch method in the hands of the experienced surgeon. Still it is superior to the other anastomotic plates, with perhaps the exception of the raw-hide plate of Robinson, which can be made of any size. The Murphy button is objectionable from the fact that the opening cannot be made sufficiently large for permanent results, but has the advantage of not requiring the outside safety stitch, and hence the operation can be done very quickly, even by the inexperienced intestinal operator, and should be recommended where time is very important and where the surgeon has not become familiar with the stitch methods; for, even though obstruction should follow, a subsequent operation could relieve it. I make this suggestion from the fact that where time is so important a factor the operation would usually be a life-saving one.

The favorable results which are reported by Dr. Murphy cannot be considered reliable from the fact that his statistics are based upon reports sent him by a large number of operators. Of course, those who are successful in their operations are glad to report to him at once, while those who are unsuccessful generally say nothing to him about their failures. Therefore, his statistics cannot be considered in any sense reliable. It will require a good deal more time to demonstrate the dangers which are incident to the use of the button. Certainly a non-absorbable material of the size of the button in the intestine is a great objection to it. He reports a case in which the

button was found in the stomach, and gives as an explanation that, perhaps, the intestine became atrophied and was not large enough to allow the passage of the button. I am sure that his explanation is incorrect, and that the button was thrown into the stomach owing to retrostalsis. There is usually vomiting after all operations of this sort, and the button is more liable to be thrown above than to be directed downward. I would suggest in the cases in which the button is used in the stomach or in the gall-bladder, that the part for the inside of the intestine be made larger than the part that goes into the stomach or gall-bladder. This would prevent this complication, which might call for a subsequent operation. Dr. Murphy states that the contraction in these operations is due to cicatricial formation, and that it is the purpose of the surgeon to avoid this if possible. He thinks that the history of vesico-vaginal fistula is the history of intestinal approximation, and that the opening produced by the tissue-atrophy induced by the button will not contract. I am sure that time will prove the incorrectness of his conclusions.

The end-to-end operation, or circular enterorrhaphy, is a dangerous procedure, from the fact that injury to the mesenteric border is liable to produce sloughing, and it is never possible to say that you will not have this complication follow the operation. Besides, any stitch method in the end-to-end operation requires so much time that it should be objected to usually on that account. The Murphy button can be used very satisfactorily for this purpose, and where an end-to-end operation is resorted to, I am of the opinion that this device should be used, unless the surgeon is an expert in intestinal suturing. However, the button is liable to produce the same condition that you get after stitching the end of the bowel, viz.: perforation and general peritonitis. The end-to-end operation is the ideal one, but when we consider the dangers of this procedure it would seem that lateral coaption should be resorted to in the cases in which circular enterorrhaphy could be done. There are many cases in which it is not necessary to make a resection of the bowel, and in which anastomosis must be done, and in these cases I am convinced that the stitch method should be adopted. Some years ago I conducted a number of experiments with circular enterorrhaphy, and my results confirmed the conclusions of others who have worked in the same line, that it is an unsafe procedure. I also brought the bowel together by what has been termed a circulo-lateral enterorrhaphy. In this operation

the ends of the intestine were approximated at the expense of the convexity of the bowel in such a manner as to increase the caliber of the gut to any extent desired. But the strain on the circulation is great, and a large proportion of these cases will not be successful. In this operation of circulo-lateral enterorrhaphy the mesentery of the resected gut is left *in situ*, and the ends of the intestines are brought together by through-and-through interrupted sutures, which are tied on the inside of the bowel. They are continued on each side until the bowels are approximated to about one-half; then an incision is made so as to increase the caliber of the gut, and, after the corners are trimmed off, the same plan of suturing is continued, the last one being turned in. An uninterruptured suture is then taken through the peritoneum and muscular layers of the intestine clear around the incision. The mesentery which has been left is brought around the wound of the intestine and kept in place by stitches. But, as I have said, this is a dangerous procedure and should not be resorted to, although it would appear at first very practicable. The Abbe method of stitching the bowel in intestinal anastomosis is thus described:

"Bring the two surfaces that it is proposed to unite well up in the wound, and surround them by small compresses of gauze or towels or flat sponges wrung out of hot water. Have at hand a half-dozen cambric needles threaded with ordinary finest embroidery black silk that has been well boiled and kept in alcohol. Cut in lengths of not more than twenty-four inches, and tie with a single knot at the eye of the needle, with one end cut to within two inches. Apply two parallel rows of continuous Lembert sutures a quarter of an inch apart, and an inch longer than the proposed cut. Leave each thread with its needle attached at the end of its row. Now open the bowel with scissors, cutting a quarter of an inch from the sutures, both rows of which are to remain on one side of the cut. Make the bowel-opening four inches long. Apply clamps temporarily to several bleeding points, pinching the entire thickness of the cut edge without hesitation. Apply no ligatures. Treat the opposing bowel in the same manner. The clamps remaining *in situ*, the parts are quickly rinsed with water. Another silk suture is now started at one corner of the openings, and unites by a quick overhand the two cut edges lying next the first rows of sutures. The needles pierce both mucous and serous coats, and thus secure the bleeding vessels, from which

the clamps are removed as the needles reach them. This suturing is then continued around each free edge in turn, and all bleeding points are thus secured more quickly than by ligature. The serous surfaces around these buttonholes are then rapidly secured by a continuation of the sutures first applied, the same threads being used, the one nearest the cut edge first. The united parts are again rinsed with water and dropped into the abdomen."

In cases of resection the ends of the bowel are invaginated and sewed with a double continuous Lembert suture. After the completion of the anastomosis the ends of the intestine are attached to the bowel by a few Lembert stitches. The operation of Abbe is a plausible one; but I do not regard it superior to the one which I will describe, and which has proven satisfactory in the experimental work of my brother and myself. The incision is not made so long as in the case of Abbe, and is about three inches in length. In the case of gastro-enterostomy the intestine and stomach are both brought into the wound, and an incision three inches in length made in both. Interrupted sutures are taken through the coats of the bowel and stomach around the entire length of the incisions, and are tied on the inside, the last stitch being tied on the outside and turned in. A continuous outside safety stitch through the peritoneal and muscular walls is then taken. In bringing the small intestine together the same procedure is followed—the interrupted through-and-through stitch of large silk being taken instead of the overhand stitch as recommended by Abbe, and only one row of outside sutures, which may be interrupted or continuous, preferably the latter. This operation can be done very quickly, and is more reliable than the various ones with mechanical aids to anastomosis. Particularly is this method of operating valuable in cases of simple stricture of the bowel; and there will be a great many of these cases now, inasmuch as there are more operations done on the intestines. In case of simple stricture it is only necessary to incise the bowel two inches longitudinally on its convexity and to bring it together by the interrupted through-and-through sutures, somewhat similar to the Heineke-Mikulicz pyloro-plastic operation. The incision divides the stricture, and the ends of the wound are brought together by catching each end of the incision with a double tenaculum and bringing them together. The wound is sutured transversely to the long incision, the stitches taken alternately from the angles of the wound, the last stitch being taken

in the middle and pushed to the inside. After these through-and-through stitches have been taken, which hold the wound in proper position, an outside safety continuous Lembert stitch is passed around the wound. This relieves the constriction without the use of any foreign substance in the bowel, and is an operation which should have a general and very successful application. The operation for the relief of stricture of the rectum and certain portions of the sigmoid flexure may be performed by the use of the Murphy button as described by Dr. Bacon, of Chicago. The application of the button in such cases is a very simple and practical procedure. Also its application in certain operations on the rectum for the removal of malignant growths is to be advised in bringing the two ends of the bowel together. This operation was suggested by Dr. Walker, of Detroit, and is a modification of the Kraske operation.

DISCUSSION.

DR. A. H. CORDIER, of Kansas City.—Mr. President: Dr. Davis seems a little sceptical about the application of the Murphy button in all cases. It seems to me that Dr. Murphy has entirely settled that question—at least in my mind. I have had one case in which I used the Murphy button. The button was retained one hundred and six days, but the case was a desperate one, due to stricture of the bowel. I did a lateral approximation. The time required for end-to-end anastomosis would have proven fatal, considering the increased traumatism and prolonged anesthesia. I made an opening close to the stricture above and below it and approximated the bowel below. By a quick operation and the use of the button my patient recovered, and took the button away with him to his home in Nashville. I received a letter one day from him reading something like this: "Words are inadequate to express my delight over the result of your operation. Murphy arrived this evening at six o'clock."

DR. WILLIS G. MACDONALD, of Albany.—I desire to say a few words about one case in which an end-to-end anastomosis was done. It was a case of strangulated hernia in a woman, of some six or seven days' standing. She was brought to Albany, a distance of about sixty miles from her home, for operation. We were not quite satisfied that it was hernia, but we proceeded immediately to operate for strangulated

inguinal hernia. I found a portion of the ileum, of which I removed ten inches in the manner which has been described by Dr. Murphy, except I put in more over-and-over stitches in the mesentery. A button of the larger size was introduced, the abdomen closed, and the case went along very well until there was a movement of flatus and partial movement of the bowels, but at the end of forty hours the patient began to vomit and the flatus stopped. This condition continued, and the patient died in about seventy hours after operation. An autopsy was not made, but I took a portion of the intestine which was removed, tied it on to a faucet with city water pressure, secured it evenly, and gently turned on a flow of water. I should say there were about sixty pounds pressure on the pipes. I turned on the water slowly, the intestine filled up, but the water did not force the button through, and finally the intestine ruptured half an inch above the point where the button was placed. Within the button was a hard, brownish mass, perfectly solid, which so effectually plugged it that the water pressure ruptured the intestine before it went through the button. My friend Dr. Ross has notes of that case. Technically, the result was absolutely perfect, we could not wish anything finer.

Dr. Murphy.—In regard to the obstruction spoken of by Dr. Macdonald, I will say that it is the first time that I have heard of such a thing occurring, and how that solid material of which he speaks got into the intestine is something I cannot explain. We cannot make the contents of the small intestine solid even with hypodermatic injections of morphine. The contents of the small intestine in every laparatomy I have done has been liquid; so in this case there must have been some undigested material in the small intestine at the time of operation, which passed into and occluded the button.

Regarding Dr. Davis's paper, I desire to thank him for the kind consideration he gave the button. I must say that every day I am becoming more and more convinced that the end-to-end operation will be the one accepted by the profession.

Dr. Davis (closing the discussion).—I have very little to add. If we decide to do the end-to-end operation, we should use the Murphy button as stated in my paper. In cholecystenterostomy it should be used. I believe that statistics will prove that the end-to-end operation is not a safe procedure. However, this is unsettled as yet. I think the future will bring us back to the stitch; that as we perfect ourselves in this work and master the technique, we will learn to do intestinal surgery as other surgery, without depending upon mechanical aids.

SHOULD ANTISEPTIC VAGINAL DOUCHING BE MADE A ROUTINE PRACTICE DURING THE PUERPERIUM?

By ADAM H. WRIGHT, M.D.,
TORONTO.

It is not exactly correct to say that Semmelweiss was the first who informed the obstetric world as to the true source of puerperal septicemia; but his name stands out so prominently in connection with the various discussions on the subject that he is, by almost general consent, considered the father of modern antiseptic midwifery. In 1847 he clearly and positively enunciated the view that puerperal fever was caused by the introduction of putrescent substances deposited in or about the genital tract of the parturient woman. The *confrères* of Semmelweiss were somewhat slow in accepting his views; but many earnest workers in various parts of the world in the course of years proved conclusively that they were substantially correct. The investigations and experiments of Pasteur and Lister gave a wondrous impetus toward advancement, and did much to place our knowledge of antisepticism and asepticism on a definite scientific basis.

Lister's practical application of such knowledge to his work in surgery stimulated surgeons and obstetricians in all parts of the world, and caused them to make special efforts to avoid septicemia. The obstetricians of Germany were especially enthusiastic, and Americans were not slow in following their example. The new ideas and the new methods spread rapidly from hospital to hospital in Germany, France, Great Britain, America, and other countries. In 1872 rigid antiseptic methods were carried out in a systematic way in numerous maternities. Mortality rates had a marvelous fall. Those horrible epidemics of that fearful scourge, puerperal fever, which had slain its thousands, were rapidly being repressed, especially in large mater-

nities. The bright reports and minute descriptions of the various methods were spread broadcast over the whole civilized world, and incalculable good was derived therefrom.

But, gentlemen, puerperal septicemia or puerperal infection (call it what you will) still exists. The annual reports of the Registrar General of Great Britain show that the death-rate from childbirth has not appreciably diminished in England and Wales. In fact, in certain parts of England the death-rate from puerperal septicemia has actually increased in recent years. In the United States and Canada the mortality from this cause is probably less now than it was fifteen years ago, but it is still very high. Why is it that such a deplorable condition of things in connection with the practice of obstetrics continues to exist, notwithstanding the flood of light which has been thrown on the subject during the last fifty years? I will not now attempt to answer the question.

Under the circumstances it behooves us as a society which includes obstetrics as one of the subjects within its province to assist others in carrying on a vigorous fight against this deadly but repressible foe, puerperal septicemia. With this object in view it was decided by our Council, on the advice of Dr. McMurtry, to have a discussion on one of the proposed preventive measures, viz., antiseptic vaginal douching, and I have been honored with the request to open the discussion.

Since the year 1848 antiseptic vaginal douches have been more or less in vogue. In the earlier years chloride of lime, chloride of soda, permanganate of potassium, sulphate of copper, etc., were used by various obstetricians. So far as I know, such injections were first used in America by Fordyce Barker in the Bellevue Hospital in New York about forty years ago, and were continued by him as a matter of routine practice about twenty-six or twenty-seven years. In later years carbolic acid became the favorite. In 1876 Tarnier recommended bichloride of mercury, which, today, is probably the favorite antiseptic agent in obstetrical work. I will not mention any of the other numerous antiseptic remedies which have been used, nor will I attempt to discuss their comparative merits.

Vaginal antiseptic douching during the puerperium was most popular between 1875 and 1885. It appeared at one time that it would be universally adopted as a routine prophylactic measure. The method seems so charming in its simplicity, and appeared so per-

fectly innocuous, that it was considered by many somewhat of a crime to neglect it. In December of 1883, about two years after Fordyce Barker had given up the practice, Gaillard Thomas became its most enthusiastic champion. His address on the subject of the prevention and treatment of puerperal fever, delivered before the New York Academy of Medicine, and the discussion which followed, including a paper by Barker, read at an adjourned meeting, were exceedingly able, and created a great deal of interest during the year 1884. The douching wave reached its greatest height about that time, but since then a reaction has set in, and at the present day opinions are divided as to the utility of the measure in normal cases.

I consider it quite unnecessary to enter minutely into pathological details. Probably all here will admit that puerperal septicemia is due to the work of living organisms, which are largely, if not altogether, introduced from without. Bacteriologists have taught us much on the subject, but have not yet proved definitely what form, or forms, of bacteria cause the poisoning. Certain kinds of cocci, especially the streptococcus, have a certain connection with the sepsis as causation agents, but exactly what it is we know not now. The bacteria are so much under the influence of surrounding structures, and are subject to so many modifications, that the study of their life-history has been found very intricate and difficult. It seems in some cases that a certain number of bacteria already lodged in the parturient woman are comparatively innocuous until other members of their species are imported from foreign sources, when suddenly all commence to work together with deadly effect; or sometimes they are kept harmless by the surrounding secretions, as, for instance, in the vagina, until they are pushed into other fields, such as cervical tears or the uterine cavity, when they immediately wage war. From a clinical standpoint the important thing to recognize is that septic matter—something that cripples or kills our patients—when introduced from without by dirty finger-tips, dirty instruments, and from dirty surroundings of all sorts, creates all the mischief.

In order to assist in avoiding the evils our Council directs me to ask the question, Should antiseptic vaginal douching be made a routine practice in the puerperium? In my opinion, no. While I hold a decided opinion, and am quite willing to express it, I have a great respect for many eminent obstetricians who say yes, and am always glad to hear their arguments, and, I hope, weigh them carefully. I

happen to be one of those who were not captured by the fascinations of vaginal douching as pictured by so many in years past. If I were at all inclined to feel proud of this, my pride ought to be lowered by a consideration of the fact that a large proportion of those who at that time held views similar to mine were too lazy, or too careless, or too indifferent to give the matter much thought or study. I have no feeling but that of contempt for this class of obstetricians, who are mainly responsible, in my opinion, for the high mortality rates which still prevail in midwifery. I have sometimes been misunderstood and misquoted; and, although I am not likely to be misunderstood by the members of this Association, I desire to add that no man has a greater desire that I to see a rigid adherence to the modern rules of asepsis and antisepsis on the part of all who practise the obstetric art.

I have studied the subject pretty carefully for the last eighteen years. I was much impressed with many of the favorable reports showing the good effects of vaginal douching. About sixteen years ago, and for a number of years thereafter, I watched the work of a friend in Toronto who practised the methods. We carefully compared notes, and had many discussions on the subject. His methods of antisepticism both in surgery and obstetrics were very carefully and thoroughly carried out. He had high temperatures more frequently than I; but for years he thought they were due to accident and not to his methods. He thought, as did many others, that the douching with weak solutions of carbolic acid could certainly not do any harm if carefully done. Although he has since relinquished obstetrics for the more narrow field of surgery, he quite came to the conclusion before his departure that the douching was at least useless in normal cases. I do not know whether it was Breisky or Tarnier who first used the expression, "Everything that is useless is dangerous," but it has always struck me as being both true and sensible. If it can be shown that douching is useless, it is surely better not to carry out a method which is very distasteful to women, whether it be dangerous or not. I think, however, it is both useless and dangerous, and will endeavor briefly to give my reasons, which are founded partly on the results of my own observations, but chiefly on the reports of those who have had experience in the larger maternity hospitals in various parts of the world.

1. Douching disturbs that perfect rest and quiet which are so

desirable for a patient after labor. I do not now refer to surgical rest of wounded tissues, but to rest in a general way which is so delicious to a weary and more or less exhausted woman. I have often thought, and sometimes stated, that meddlesome midwifery reached the acme of absurdity when, in 1883, a distinguished New York gynecologist recommended about the most persistent and aggressive obstetric meddling that had ever been conceived by the brain of man. He advised, among other things, the administration of a douche every eight hours, and the introduction of an iodoform suppository every two or three hours for at least ten days after delivery: that is to say—the bruised and lacerated vagina was to be invaded from eleven to fifteen times every twenty-four hours for at least ten days, if the unfortunate victim should live so long. Little wonder was it that Fordyce Barker entered a strong and vigorous protest!

2. Douching is unscientific on surgical grounds. After labor the utero-vaginal canal is bruised and wounded. On surgical principles the most important points in the treatment are rest, pressure, position, and drainage. By rest I refer to that physiological rest to which so much importance has been attached by Hilton and many others. The wounds of the cervix and vagina are, as a rule, kept closed by the elastic and even pressure of the surrounding tissues. The introduction of suppositories and douching seriously interfere with rest and pressure as described, and, in my opinion, materially delay the healing of those wounds. The recumbent posture with the slight changes in position required in voiding urine and feces is well adapted for drainage.

3. Douching does not lessen the dangers accruing from the presence of bacteria in the vagina. This is probably the most difficult contention to prove definitely. Do destructive organisms ever exist in the vagina after labor? Undoubtedly, yes. In some cases cocci of various kinds are present in varying numbers. The recent investigations of Döderlein, Winter, Steffek, Koenig, and others confirm the opinions of former observers as to the occasional, if not frequent, presence of pathogenic micrococci in the vaginal secretions after labor. It is generally agreed, however, that in normal cases the vaginal mucus is strongly acid. The acidity is produced by innocuous organisms which have their habitat in the healthy vagina. It happens that these organisms have some restraining, if not

destructive, effect on the pathogenic cocci. Vaginal antiseptic injections may interfere with this normal acidity, and thus chemically lessen the resistance of the tissues to bacteria. Taking these views as correct, we learn that nature has provided a secretion in the vagina which prevents the wicked organisms from doing any harm; and, such being the cases, douching is at least useless.

4. Douching is actually dangerous. I have already alluded to certain of these dangers, especially from a surgical standpoint. It is apt to disturb clots, and thus open avenues for infection; to open lacerations of the cervix and vagina, and thus prevent them from healing; to wash bacteria into the uterine cavity, and thus cause septic endometritis. Among other dangers which are generally due to accident or carelessness are the introduction of septic matter by fingers and instruments. Some mention other rare or minor dangers which I will not refer to in this paper.

Many of the arguments thus far advanced are to a certain extent theoretical; and, in connection therewith, the results of clinical experience ought to assist us materially in arriving at correct conclusions. Fortunately statistics prove beyond the possibility of doubt that the results of our modern methods, whether with or without douching, are vastly better than those of the pre-antiseptic era. The fearful mortality rates of 5 to 10 per cent., or even more, have been reduced to about one-half of 1 per cent., or less, in all our well-ordered maternity hospitals, both in the old and the new world. As far as I can learn, the weight of evidence goes to show that the hospitals in which the routine douching is not practised have better results. Baruch, of New York, published a table, from which it appeared that in the following hospitals where the douche was in use —Charitè, Parma Maternity, and Glasgow Maternity—the mortality ranged from 1.5 to 3.42 per cent., while in the Tarnier Maternity, Paris, Prague Maternity, Copenhagen Maternity, and New York Maternity, where the douche was not in use as routine practice, the mortality ranged from 0 to 0.56 per cent. (*N. Y. Med. Journ.*, March 22, 1894.)

It will be seen by this that one maternity (the Parma) had the high mortality of 3.42 per cent. Now, although I am not partial to douching, I do not for one moment suppose that the bad results at Parma were due to this practice alone or chiefly. There must have been other elements at work.

More recent reports prove conclusively that the mortality rate may be brought down to 0.5 per cent. or less, whether douches be used or not. From one of Boxall's papers we learn that the mortality in the London Lying-in Hospital, for five years previous to 1890, was only 0.418 per cent., the number of patients treated being 2150. Vaginal douching was done as a routine measure twice a day during the puerperium. I was, for a time, much impressed with statistics such as those quoted by Baruch, but the statistics from London, such as those just mentioned and other results under certain obstetricians in Edinburgh and Glasgow, have perhaps taught me a little humility. After all, douching or otherwise as a routine practice is simply one detail among a thousand or more which go to make up the long and perhaps tortuous chain of antiseptic and aseptic midwifery.

I am very strongly impressed, however, with the opinion that the use of the douche does sometimes, if not frequently, cause a rise of temperature, which must of course be considered an evil. During the period referred to by Boxall, when the death-rate was 0.418 per cent., the labors followed by fever from all causes amounted to 40.65 per cent. In a number of maternities on the Continent where no douching is done the percentage of febrile complications ranges from 6 to 10 per cent. Leopold has compared the two methods in Dresden with the following results: Of 2388 deliveries with injections, 17.2 per cent. had fever; of 1136 deliveries with vaginal washings, 20 per cent. had fever; of 1123 deliveries with no injection at all, only 9.7 per cent. had fever (*Medical News*, February 14, 1891). In all these cases similar antiseptic precautions were applied to everything which approached the patient, but in the latter series there was no interference with the parturient tract. In comparing the second with the third set of cases it will be seen that in 1000 cases 200 had fever after deliveries with injections and vaginal washings; while, in the same number, only 97 had fever when no injections had been employed.

In considering the statistics from modernized maternity hospitals I think it important to keep in mind the fact that the injections are administered with care and skill. In private practice they are frequently given in a careless and slovenly way, notwithstanding conscientious efforts on the part of the accoucheur to guard against such faulty work. A large proportion (more than half I think) of our nurses do not know how to administer a vaginal douche properly.

If you will admit, for the sake of argument, if not absolutely, that Leopold's results show that skilful antiseptic vaginal douching is not only useless but actually dangerous, then I think it follows as a logical conclusion that indiscriminate douching, by good, bad, and indifferent nurses, such as are placed at our disposal in private midwifery, is dangerous in a still greater degree.

Such is my opinion at the present time, and such it has been for many years, but I would hesitate to say that it is final or unalterable. I have not yet reached that happy state when I feel that I know all that is worth knowing about antiseptic midwifery. It is a subject which does not grow old with me—in fact, it is ever new. I am as anxious now as I ever was to learn something new about antiseptic and aseptic methods; to adhere religiously to what I consider the best rules in both private and hospital practice, and to do what I can to teach others, especially my students, how to avoid preventable maiming, and preventable death. I am not sorry this question is still unsettled. I think it exceedingly fortunate that we are able to get from time to time such valuable and accurate reports from the various large maternities, and hope we may in the near future get still more light on a subject of such vast importance from a humane as well as a professional point of view.

SHALL THE VAGINAL DOUCHE BE USED AFTER NORMAL DELIVERY?

By WILLIAM H. TAYLOR, M.D.,
CINCINNATI.

Following the current of professional opinion since the dawn of the era of antisepsis I have adopted the various proceedings which from time to time seemed demanded, using the antiseptic methods in all forms, consequently among others the douche, carrying out the required details, especially in my hospital service, with all care; but I am glad to say that several years since I discontinued the use of the douche in all normal cases, and am satisfied with my decision.

I now strenuously urge *asepsis*, cleanliness of patient, nurse, and physician, and am content with the application of the sublimated pad to the vulva immediately after delivery, continuing its use till the danger of the introduction of germs has passed.

My attention being directed to this subject by the question asked, I have looked over some recent literature to learn the trend of professional opinion. In four most recent works on obstetrics by American authors two advise the intravaginal douche after normal delivery. One says it should be used only in cases of sepsis or fever not controlled by rigid external cleanliness. Another says, "In spite of the addition of carbolic acid or corrosive sublimate, there is statistical evidence that the vaginal douche augments the chances of infection." Most of the recent German writers deem it needless. In the Munich clinic all aseptic precautions are enforced, but no irrigation after delivery, and a recent discussion of the subject reported in the *New York Journal of Gynecology* shows a predominance of opinion against it.

Naturally as our knowledge of bacteriological influence increases, our views as to the action of bacteria and our treatment become more definite, and happily we have recently had some very well-

defined conclusions regarding their effect in puerperæ. Döderlein, as the result of extensive investigation, asserts that the vaginal secretion with strong acid reaction contains bacilli which are harmless, and which cannot infect lesions of the parts, but in secretions of neutral or weak alkaline reaction we have conditions favorable for the development of pathogenetic germs. He logically suggests that where we find reaction of secretion favorable for the development of septic elements prophylactic injections should be used, but asserts that in physiological cases in private practice vaginal disinfection is not required, and R. Schaffer, supplementing these views, says: "In normal birth whatever the secretion every disinfection of the inner genitalia is to be avoided."

Fraenkel says: "That the uterine lochia is normally free from infectious elements," therefore no antiseptic injection is needed in normal labor. We may go still further and claim that normal blood-serum is germicidal, as is also the nuclein of mucous secretions, so that Nature establishes a barrier against the entrance of noxious influences.

Dr. C. S. Bacon has recently said: "If the vaginal secretion is of normal (acid) reaction as determined by the litmus paper, no pathological bacteria are present and no douche is required. If the reaction is slightly acid, neutral, or alkaline, the sublimate douche should be used."

Practically we believe the habitual use of test paper may be a safe guide to determine the use of the douche.

OBSTETRIC ANTISEPSIS.

By J. EDWIN MICHAEL, M.D.,
BALTIMORE.

THE question of obstetrical antisepsis is no longer one of principle, but one of detail. I am not acquainted with any authority of importance which arrays itself against antiseptic principles, although there is still much discussion about the best method of attaining the desired end. The surgeons of today do not work under the complicated and somewhat dangerous method of Lister, although more modern and much more simple measures are founded on the same theory.

Experience has eliminated dangerous and unnecessary details. Neither do obstetricians adopt the method so urgently demanded by T. Gaillard Thomas half a score of years ago, but they get the desired results much more simply and successfully. Although autogenetic puerperal fever must be admitted as a possibility, as shown by the work of Steffek, Mirmann, and others, the part it plays in practical obstetrics, as has been shown by Leopold and others, falls into insignificance.

As a rule which will show only very rare exceptions, a clean doctor, a clean nurse, a clean patient, and cleanly surroundings will give a normal puerperium. I am convinced that the lead of Leopold should be followed where possible, and that a normal woman should be allowed to have a normal labor, and not be meddled with by even an examining finger. In such cases palpation gives all the necessary information. That is the rule I follow in private practice, and the results are most satisfactory.

In hospital practice, however, where the patients are subjected to examination by students and nurses, I believe that both ante- and post-partum douches are necessary, notwithstanding the fact that most rigid hand-disinfection is practised before examinations are

made. In the Free Lying-in Hospital of the University of Maryland our last 600 cases gave us no death due to puerperal sepsis, and a very small amount of septic morbidity. We use sublimate for disinfecting purposes, 1 to 2000, for vaginal douches, and hand-cleansing after the usual soap-and-brush process, and 1 to 8000 for intra-uterine douches when such are necessary, *i. e.*, after version, high forceps, putrid child, escape of meconium, or introduction of the hand for any purpose whatever, and up to the present time we have had nothing but satisfaction from the drug. No case of poisoning has presented itself. Once we had a case of scarlatina occurring in the person of a patient already confined and occupying a bed in one of the lying-in wards, and once a case of erysipelas under the same circumstances, but prompt isolation and disinfection prevented the spread of either disease.

I am convinced that the main elements to be looked after are the doctor, the nurse, and the genital tract. The success of our out-patient department shows this. Many of our patients are confined in wretched hovels, where bad air, filthy surroundings, etc., are simply unpreventable, and yet the results are admirable. That this is due to the method, I feel assured, from the number of cases of puerperal sepsis I see where confinement has occurred under similar circumstances at the hands of midwives and physicians who do not use the same means which are practised in my clinic for its prevention.

I have been very much interested in this question, and have recently secured certain information from the City Health Department which, although not yet classified and completely studied, seems to point to the fact that an inordinately large proportion of our puerperal fever mortality is to be laid at the doors of our ignorant and careless midwives.

NOTES ON A CASE OF CHOLELITHIASIS.

By F. BLUME, M.D.,
ALLEGHENY.

Mrs. K., an anemic and very nervous woman, came under my observation, May 7, 1894. She was suffering from pain at the epigastrium, and gave the following history: "I am thirty-seven years of age, married seventeen years, and have one child six years old. I menstruated first at the age of twelve years, had in the same year my first attack of colicky pains in the stomach, and I have not been in good health ever since. During the past five years my condition has grown worse; the pain in the stomach, occurring more frequently, has been followed by vomiting, and sometimes by chills and cramps in the legs. There is now an almost constant dull aching in my stomach and in my back, so that I am compelled to be very careful with my diet. About three months ago, while on a visit to Florida, I had a severe attack of pain, followed by a chill and by vomiting of a large quantity of bile. Since then several slight paroxysms have occurred, with and without chills and vomiting. I never had icterus, dysentery, or malaria, and I never vomited blood."

On examination, the abdomen was found to be distended, the liver of normal size, the gall-bladder could not be felt. The epigastrium could not be carefully examined, as palpation and percussion aggravated the pain. Examination of the heart and lungs was negative. The tongue was coated, the conjunctivæ slightly icteric, the pulse 100, the temperature normal.

The aspect of the patient did not indicate serious distress. She became much excited when I gave her a subcutaneous injection of morphine to alleviate her suffering. There having been no movement of the bowels for three days, an enema was ordered.

On the following day she felt much relieved, though there was still marked tenderness at the epigastrium on pressure. She had a small

movement of the bowels, the feces and urine being of normal color, and had taken some nourishment without discomfort. A careful diet was prescribed, and powders consisting of calomel, rhubarb, and bicarbonate of sodium were given. She improved remarkably within the next few days, and was able to attend to her household duties.

Repeated examinations did not throw new light upon the case. The liver was evidently not enlarged, the gall-bladder not palpable. A slight resistance, however, which I believed to feel at the epigastrium right below the processus xiphoideus led me to give my diagnosis with reserve. The fact that she had but one child, her complaint of leucorrhea and backache, made it at least possible that not only the continued sterility, but also the paroxysms of pain at the epigastrium, might be dependent upon some serious lesion of the reproductive organs. Upon examination, however, the uterus was found to be slightly retroverted, movable, and situated in the right side of the pelvis. The right ovary prolapsed, not adherent; the left uterine appendages normal.

These conditions, to my mind, could not stand in causative relations to those gastric disturbances which persisted after the acute attacks of pain had subsided. Besides a very obstinate constipation there were sufficient symptoms to warrant a diagnosis of chronic gastritis. Whether the painful paroxysms were a periodical exacerbation of the supposed catarrhal condition of the stomach, or a neurosis—gastralgia, or the consequence of a grave pathological condition of the liver, could not be definitely determined. The probability of gastric ulcer was to be excluded, the pain being evidently not dependent upon the ingestion of food, and the most prominent symptom, vomiting of blood, being absent. Taking into consideration the former history of the case, the first occurrence of the distressing symptoms with the advent of puberty rendered a diagnosis of gastralgia admissible.

On the morning of May 16th she had another attack of pain, which was accompanied by nausea, and again relieved by a hypodermatic of morphine. The patient was quite comfortable the following day, and under the use of Carlsbad water her general condition now continued to improve, so that a week later her husband decided to go with her to Europe in the coming month. Though she disliked the idea of going abroad, tickets for the voyage were secured. When she was told of the arrangements which had been made she grew much

excited, had a restless night, and on the following morning, May 27th, a severe paroxysm of pain followed by a chill and very obstinate vomiting, which necessitated rectal alimentation for several days. A recurrence of the pain in the morning of May 30th was again accompanied by a chill, the first at which I had the opportunity of being present. Her pulse was 110, the temperature 102°, the latter becoming normal about six hours later.

These chills, which now came on every other day, and which could not be influenced by quinine, the elevation of temperature varying between 99° and 103°, and the resistance at the epigastrium mentioned above led me to believe that a serious lesion in the liver was present. It appeared probable that the chills were caused by an irritant in the bile-ducts, possibly gall-stones, and that inflammation of the biliary tract had set in or was threatening. I asked for counsel, and on June 3d Dr. C. B. King was called. He agreed in the diagnosis. The advisability of an exploratory incision was considered, but decided against, as no accurate indications could be established.

The patient grew rapidly worse. She was greatly annoyed by the pain in her back, referred to an area left of the spine and about three inches below the inferior angle of the scapula. The chills occurred daily, then twice a day, or the temperature went up without chills to 103° and 105° in the morning, fell at noon to about 100°, to rise again late in the afternoon. Looseness of the bowels and a marked tendency to perspiration completed the symptoms; it became evident that pus had formed, and a septic condition developed. At the request of the family, Dr. William Pepper was telegraphed for June 7th, and a consultation was held during the following night.

After a careful examination Dr. Pepper agreed that there was no physical evidence of a serious lesion in the liver, and that the symptomatology of the case was indicative of the presence of pus at some point. Dulness on percussion at the site of pain in the back, extending from the vertebral column to the left posterior axillary line, led him to make an exploratory puncture; the result was negative. The sense of resistance at the epigastrium, taken together and considered in relation to the symptoms, led us to regard abscess of the liver as one of the probable lesions. The inability to find any point where puncture would confirm diagnosis made it clear that it was not a large single abscess, but that multiple centres of suppuration had formed. The condition was a hopeless one.

Before Dr. Pepper left, the patient had a severe chill; another occurred in the afternoon. On the following day, June 9th, the condition had changed remarkably. She was much depressed, restless, and complained of great weakness. There was pronounced jaundice and profuse perspiration. The urine was dark green, while the diarrheal dejections remained normal in color. The pulse, varying between 110 and 130, was small and weak. The range of temperature was 102° to 104°, the fever taking on more the continued type. Labored breathing indicated failure of the heart's action. Ascites developed during the following two days, and slight edema about the ankles. The mental condition remained unaffected until four hours before death, when coma supervened. The patient died in the forenoon of June 12th.

Post-mortem examination twenty-four hours after death. The body moderately emaciated and deeply icteric, especially the trunk.

On opening the considerably distended abdomen the viscera were found to be in normal position, the bowels distended by gas, in the abdominal cavity about two quarts of a reddish fluid.

The stomach and the duodenum were partly adherent to the gall-bladder and to the lower surface of the liver. The stomach was of normal size, its serosa deeply injected, its mucosa smooth. The mucous membrane of the duodenum was normal.

The liver was slightly enlarged, its serosa, especially over the left lobe, dark-colored. There were slight elevations here and there, containing yellowish fluid. The gall-bladder was contracted and contained one large gall-stone. The cystic and the common duct were greatly distended and filled with a large number of dark-brown faceted gall-stones. From the hepatic duct, which permitted the free access of the index-finger and which was packed with calculi, it was possible to follow the ramifications of the biliary tract, which also were greatly distended, containing many stones and inspissated bile. The calculi were distributed over the left, the quadrangular, and Spiegel's lobe, but few of them being found in the right lobe. Originating from and situated around the biliary ducts, scattered throughout the three smaller lobes of the liver, numerous abscesses were found, varying in size from that of a pea to that of a small walnut. The tissue of the right lobe appeared almost normal on inspection, except at the convexity, where several abscesses were found, the largest of them being of the size of a pigeon's egg.

The spleen was enlarged, soft, friable; the pulp of a dark-cherry color.

The kidneys and the pancreatic gland were normal.

The number of calculi removed besides the minute concretions was one hundred and twenty-three, weighing fourteen drachms. The stone removed from the gall-bladder weighed four and three-quarters drachms, and measured one and five-eighths by one and a half and one inch.

The importance of the subject and the peculiarities of the case may excuse me for having given the details of the history with such completeness.

Reviewing the literature of the past ten years, one must feel surprised to meet with so many publications of cases of cholelithiasis. These publications, emanating almost exclusively from the pens of surgeons, and adding new laurels to the art and science of surgery, have been increasing in number from year to year, and have demonstrated the frequent occurrence of diseases of the gall-bladder and biliary ducts. While the various methods of operation have been thoroughly discussed, a most important question seems to have been lost sight of—the question of diagnosis. It is a brief consideration of this question to which I now wish to invite your attention.

Analysing the symptomatology of the case under consideration, the absence of all the physical signs is certainly embarrassing. Notwithstanding the large number of gall-stones, their extensive distribution, and the numerous points of suppuration, an enlargement of the liver could not be ascertained. Though the bile-ducts were distended to their utmost capacity by impacted calculi, the flow of bile was not seriously interfered with, jaundice did not occur until the case progressed and septic cholangitis developed.

It is stated by various authors that the paroxysms of pain are followed by chills and elevated temperature, and that the pulse is usually slow. Neither chills nor a rise of temperature occurred during the first three weeks of my attendance. The pulse was accelerated during the paroxysms, and at no time below 70.

The association of obstinate gastro-intestinal derangements with cholelithiasis is well known, and was very marked in my case. A sense of fulness and an obscure dull pain at the epigastrium, a gradual loss of appetite and an intractable constipation are, so far as my experience goes, often the only initial symptoms. The tendency to

nausea is one of the earliest manifestations in many instances, grows, as the case progresses, more and more pronounced, and is followed by vomiting. Clearly it is impossible, in the absence of other symptoms suggestive of a morbid condition in the biliary tract, to demonstrate the dependence of these phenomena upon hepatic disorders. The diagnosis, therefore, must remain doubtful if, with the progress of the case, physical signs fail to develop. Usually the occurrence of biliary colic, the most characteristic symptom, soon clears the diagnosis, which is made positive by the discovery of calculi in the stools.

The case under consideration may serve as an illustration of the fact, mentioned by Ord,[1] that the gall-stone is to be dreaded and feared in proportion as there is less of the colic and more of the accessory symptoms. The painful attacks in this case could certainly not be asserted to be hepatic colic, the vigorous protests of the patient against the subcutaneous injections, and, later on, her repeated assertion that she dreaded the chills more than the pain, established this. The close resemblance of these paroxysms to gastralgia, as stated in the history, is a most remarkable feature. There were no points of distinction during the first three weeks of my attendance. This leads me to the inference that in many instances of so-called gastralgia and of other obscure gastric disturbances which resist all methods of treatment, the cause is not to be sought for in the nervous system or anemic condition of the patient, not in the uterus and ovaries, nor in the gastro-intestinal canal itself, but in that portion of the liver overlapping the stomach.

It is said that the presence of gall-stones can sometimes be determined by palpation. The sense of resistance which I felt at the epigastrium, and which the autopsy proved to be caused by calculi, was too indistinct to indicate its nature. Whether an examination under anesthesia would have cleared the condition is at least doubtful, yet I would certainly resort to it in future cases.

In those instances where a positive diagnosis is impossible, and where the inconveniences are great, an exploratory incision is not only justifiable but becomes imperative as long as the condition of the patient permits of surgical intervention.

With regard to internal medication I have but little to say. I know of no remedy which with any certainty either prevents the formation of calculi or is capable of dissolving them. Carlsbad water,

[1] Med. Record, 1888, p. 68.

calomel, salicylate of sodium, olive oil, and Durand's remedy are highly recommended, and are said to have been used successfully. Unfortunately, I have not met with such success. The remedies were not well borne, the stomach rebelled, my patients grew worse. The efficiency of these drugs appears to me at best questionable. Wherever a favorable result has been obtained it is doubtful whether this be due to medication or not. It is an interesting fact that patients who have suffered from gall-stones for many years apparently get well after they have stopped taking medicine. They have nothing to complain of until, after an interval of many months or years, a new attack of pain gives evidence of the persistency of their old trouble. Such a case, where, after an interval of seven years, a most violent paroxysm occurred, followed by the expulsion of a large gall-stone, has quite recently come to my notice.

In sharp contrast to the uncertainty of medical treatment are the results obtained by surgical interference. These results, which of late have been so uniformly successful, have secured a new and most promising field to abdominal surgery. The view is gaining ground that cholelithiasis must be regarded as a surgical affection demanding intervention in at least a certain proportion of the cases.

To discuss the advantages of the various operations now in vogue is beyond the limits of this paper. It may be said, however, that a method is to be preferred which not only gives immediate relief, but attempts to establish conditions which definitely prevent a recurrence. Whether it be possible to eradicate the trouble entirely, time must tell. The supposition that gall-stones are formed almost exclusively in the gall-bladder, and only rarely in the hepatic ducts, is one of the causes which led Langenbuch[1] to perform and to advocate cholecystectomy. This view and his assertion that calculi never, or but in extremely rare instances, are formed simultaneously in the gall-bladder and in the hepatic ducts have been misunderstood and have led to errors. Such an error, I take it, is the theory advanced in "an American text-book of surgery."[2] Having described Langenbuch's method, the author says, "the great point in favor of this operation—cholecystectomy—is the fact that once the gall-bladder is extirpated no more gall-stones are formed." The case under consideration renders this theory untenable.

[1] Berliner klinische Wochenschrift, 1884, page 827.
[2] An American Text-book of Surgery, 1893, page 749.

A NEW OPERATION FOR THE RADICAL CURE OF INGUINAL AND FEMORAL HERNIA.

By CHARLES A. L. REED, M.D.,
CINCINNATI.

Hernia, when treated by surgical methods, is a safely curable condition. I place this declaration at the head of my paper for the reason that, by its position, I wish to make it emphatic. The necessity for this emphasis arises from the fact that many persons, not in this audience of select surgeons, but beyond this Association, in the medical profession and out of it, are victims of the opinion that nothing can be done for these cases of rupture. As a result, large numbers of persons endure inconveniences and pain arising from the protrusion or from a truss, or both, until they are overtaken with what too frequently proves to be a fatal strangulation. It has fallen to my lot during the last twenty years to do a considerable number of operations for the relief of strangulated hernia. I can say with entire candor that no class of cases has ever impressed me so profoundly as have these unfortunate victims of neglect, for I assume that, in the light of the demonstrated results of surgical practice, cases of rupture that are not operated upon are essentially neglected. The agonizing pain, the intractable obstruction, the persistent vomiting, the active peritonitis, the fatal collapse, are too often the elements of the tragic picture that the surgeon is called upon to contemplate. It is precisely these conditions, in less or in greater degree, that sooner or later come to the majority of all victims of these forms of rupture. There is hardly a practitioner but that can recall cases in which an entirely reducible hernia had given no inconvenience for the twenty, thirty, or more years since its occurrence, when all at once, and apparently without cause, it would slip past an even well-fitting truss, become strangulated, and utterly defy reduction except by surgical means, or, if these were withheld,

end in death. It is a knowledge of exactly these facts, together with the pain and discomfort of a truss and an embarrassing sense of physical incapacity, that prompts almost every person who is ruptured to seek some means, not of palliation, but of cure. Advanced surgeons, such as Bassini, Macewen, Marcy, and McBurney, have responded to this demand by devising operations that have reduced the mortality to a minimum, but it cannot be said that the medical profession as a body has appreciated this practice at its full value. On the contrary, these cases are either turned over to the truss-vender or are permitted to fall into the hands of the surgical charlatan, whose only stock in trade is a squirt-gun and some tea made from white-oak bark.

The truss has done some good and much harm. That it has been a valuable support to many people, that it has enabled many who were otherwise incapacitated to resume and maintain their avocations with a sort of comfort, and that the inflammation provoked by its pressure has closed the ring for a time in a few cases, comprise practically the sum total of its good results. On the other hand, that it has lured many persons into a false and even fatal sense of security cannot be denied. The most serious indictment, however, which can be brought against the truss is that, probably, in a majority of all cases in which it is employed, it only aggravates the real condition that it was intended to cure—a fact too frequently lost sight of simply because the pad persistently applied represses the hernial protrusion for the time being. The real damage is done by the truss in a twofold way: The first consists in the fact that a "well-adjusted" pad must necessarily dilate the ring into which it is being continuously pushed by the elasticity of the spring; the second consists in the fact that the tissues around the ring waste, just as all tissues waste or atrophy under persistent pressure, and consequently that the parts which it is so important to strengthen are really weakened in a very serious way by the truss.

The treatment by injecting irritating fluids under the skin, presumably into the ring, but really wherever they may lodge, needs only to be mentioned to be condemned. Although it was at one time subjected to careful trial by the medical profession, after its inauguration by Heaton, the verdict has been rendered against it. That it ever commanded sufficient recognition to be subjected to trial is due to the fact that it was vaunted as a method of practice

before what now comprises modern surgery was elaborated. Today the practice has no footing except in the hands of persons outside of the pale of the profession. The condemnation of the practice arises not only from its extreme danger and demonstrated inefficiency, but because it violates the most important axiom of surgery—namely, that all parts of the field of operation shall be under the inspection and control of the operator.

The operations which have been devised and generally practised for the cure of hernia, whether in connection with strangulation or as an elective procedure, have, to my mind, had a common defect, which, more than any one factor, has been responsible for the recurrences which mar the statistical tables of able operators. This defect consists in the fact that in all of the operations, Macewen's, McBurney's, Marcy's, Bassini's, the attempt is made to do the operation through the canal itself, with the result that the conditions within the pelvis which really cause the hernia are left practically undisturbed. These conditions consist of an infundibular peritoneum and a serous track which, particularly in congenital cases of scrotal herniæ, is left in primitive continuity, being only temporarily obstructed by inflammatory exudate. What is needed is practically to invert the infundibulum, close the internal ring, fix the cord in a position of increased obliquity, and obliterate the canal.

An operation that I have devised, which has proven primarily successful in my hands, and that meets the points which I have just enumerated, is done as follows: the incision (in inguinal hernia) is made from a point two inches above Poupart's ligament midway between the antero-superior spinous process of the ilium and the spine of the pubis, obliquely downward and inward as nearly as possible coincident with the axis of the inguinal canal to a point at the base of the scrotum. The dissection is then carried into both cavities, scrotal and pubic.

The protruding viscera are then reduced and carefully inspected after being brought out above. The sac is then carefully dissected from its scrotal connections and reversed by invagination. It is then opened by two incisions, one toward the pubis, the other toward the ilium, being thus converted into an anterior and a posterior flap. The cord is now dissected loose and placed in the canal, now denuded of its peritoneum at its outer angle. The internal ring is now closed by several interrupted sutures, animal or pure silk, these sutures

being applied beneath the peritoneal flaps formed by splitting the sac, care being taken that in the closure of the ring undue pressure shall not be brought to bear upon the cord. The posterior peritoneal flap is now excised, the stump being ligated should there be any demonstrated necessity for doing so. The anterior peritoneal flap is carried across the now obliterated internal ring, and is stitched by interrupted sutures to the posterior parietal peritoneum. This flap may be made broader by further dividing the peritoneum. The external ring is now closed by passing a number of sutures through its pillars external to the cord, which is now fixed in the internal (pubic) angle of the outlet of the canal. The incision into the abdomen is now closed by interrupted figure-of-eight sutures, the internal loop embracing the peritoneum, the aponeurosis of the transversalis and of both oblique muscles and the external loop embracing the superficial fasciæ, fat, and skin. These sutures should not be more than three-sixteenths of an inch apart. The incision into the scrotum may be closed in the ordinary way. Drainage should not be employed except in the presence of marked oozing or obvious infection.

The reasons underlying these successive steps need but little elaboration: 1. The incision through the abdominal wall is important, because it places all of the conditions under the direct control of the operator. 2. The inversion and bisection of the sac furnish two excellent instrumentalities for the further obliteration of the canal. 3. The complete enucleation of the cord from within the pelvis outward still further denudes the canal of its serous lining. 4. The suturing of the antero-posterior pillars of the internal ring strengthens the parietes at the most strategic point and secures the occlusion of the canal by the deposit on it of firm cicatricial tissue. 5. The transplantation of the peritoneal flaps (*a*) destroys the infundibular form of the peritoneum, and (*b*) completely protects the now closed ring from dilating visceral pressure.

On general review of the operation I feel that it can be commended for the following reasons, viz.:

1. It is safe. There ought to be no deaths from it when done in uncomplicated cases under sanitary surroundings and by an operator skilled in abdominal surgery.

2. It causes but little loss of time. The surgical period is over within a week, although a longer time ought to be taken to permit the parts to become firm. A truss should not be worn after getting up.

3. It is comparatively painless. In the absence of internal ligatures compressing nerve-trunks it is gratifying to note the absence of all pain except the slight soreness of the superficial incision.

4. It is curative. The complete closure of the internal ring and the obliteration of the canal successfully prevent the recurrence of the hernia.

DISCUSSION.

Dr. L. S. McMurtry, of Louisville.—We may congratulate ourselves that a surgeon of Dr. Reed's wide experience and skill should have directed his attention to an operation for the radical cure of hernia, a condition which has so long been one of the opprobria of surgery. It has seemed to me that surgeons who are in the habit of dealing with the peritoneum would concentrate their attention upon the surgical treatment of hernia and make that surgery what it should be. We all know that this department of surgery has fallen to a great extent into the hands of empirics. While it is true that a number of modern surgeons, some of whom have been referred to by the essayist, have recently directed considerable attention to the surgery of hernia, for a long time hernia, just as in former times obtained with orthopedic surgery, has been in the hands of quacks, and the profession to a certain extent has neglected it. We all know that the use of a truss is but a compromise; that it does not cure. It is often harmful as well as inefficient.

There has been marked improvement in recent years in dealing with hernia in emergency. But a short time ago we were taught that in cases of strangulated hernia it was necessary to devote a great deal of time to taxis and various other means to effect reduction, dreading to operate. Now, all progressive surgeons when they have a strangulated hernia to deal with, cut down on it, liberate and restore the strangulated viscus. The plan of the operation devised and presented by Dr. Reed seems to be thoroughly rational and practical, and I sincerely hope the author of the paper will continue his labors in this line, so that this method may be perfected in every detail, and generally adopted. To that end I trust future reports will be made upon it in this Association.

Dr. Jones, of Rochester (by invitation).—It seems to me a hernia is a hole with something in it that ought to be put back, the hole

sewed up, and intestine kept back. So I open it, push up the intestine, cut off the sac, after drawing it down as far as I can and ligating it, push back the stump, denude the aponeurotic edges all around, and sew them up tight, with the exception of leaving sufficient room for the cord, with buried permanent ligature. This will permit of firm union. I would ask Dr. Reed whether the treatment of the peritoneum is a necessary part of the operation. Does it add anything to the strength of the union after the sac has been removed, tied short, and pushed back, the edges of the ring freshened and sewed in a way that they will stay together firmly? Is anything more necessary?

Dr. M. Hartwig, of Buffalo.—I would ask Dr. Reed what his idea would be of trying transplantation of the testicle with the cord into the abdominal cavity.

Dr. Reed (closing the discussion).—The question that has been raised by Dr. Jones is precisely the one which I had intended to answer in my paper. Dr. Jones has done the operation which is generally done, and which practically always results in at least a temporary obliteration of the canal, and at least temporary retention, but precisely the operation that furnishes us, so far as statistics are concerned, a large proportion of recurrences. When the canal has been closed after the manner that has been mentioned by the gentleman from Rochester a recurrence occurs. He has denuded the margins of the fascial structures comprising the ring, and he has approximated them by suture. They have become agglutinated; there is a temporary deposit of cicatricial tissue, and we would think the canal is closed; but the trouble is not with the hernia so much as it is that there is a funnel-shaped arrangement within the pelvis—if the gentleman will recall the anatomical surroundings—by which all the intra-abdominal pressure is focussed at that one point. (Here Dr. Reed pointed out by diagrammatic sketches on the blackboard the weak points in the method usually followed in the treatment of hernia, and then recounted the consecutive steps of the operation or plan he had devised himself.) It occurs to me it would be an exceedingly good thing to get rid of the cord altogether and absolutely close up the ring.

In reply to Dr. Hartwig, I do not know what would be the result of a man carrying his testicle around in his pelvic cavity. I do not know to what extent it might result in pain. I confess I have encountered the proposition in the literature of the subject. There have been cases reported, but I have not studied them carefully. I am not sufficiently familiar with the facts to answer the question intelli-

gently. It is not an irrational proposition, provided the testicle can be carried in that position with impunity. It is a matter that can only be determined by experience, and to what extent experience has established that point I am sure I cannot answer on the spur of the moment.

In speaking of the testicle, there is one operation to which I must object—that is, lifting the testicle up and sewing it fast to the ring. That is positively irrational. I mention it because it is a practice adopted in certain quarters, and needs only to be mentioned to be condemned.

HYSTERECTOMY FOR CANCER.

By E. W. CUSHING, M.D.,
BOSTON.

I do not propose to take up the time of the Association with a long review of the different methods for doing hysterectomy for cancer, but there are some points which have come up which I think worthy of discussion. I presume it is agreed that vaginal hysterectomy for cancer has come to stay, and that it is the proper thing to do as soon as cancer is discovered. High amputation has gone by. It was just as hard to do as, and more dangerous than, vaginal hysterectomy. None of us would do better than Schroeder, and he lost eight per cent. of his cases of high amputation. The question comes up, If we have to do a vaginal hysterectomy, how are we going to do it? Recently Pratt's method of doing vaginal hysterectomy has been proposed—that is, without tying the vessels, the essence of the process being to keep just so far into the uterine tissue, leaving enough of it to contract and stop the mouths of the uterine arteries that may permeate the uterus. As far as this goes it is all wrong. The first object is to keep as far away from the cancer as we can without cutting into the ureter. Consequently there comes the question of the choice of methods of operation from below, whether to use clamps or ligatures. I began with clamps. I had good results: twenty-one cases, with nineteen recoveries. There is a certain disadvantage in the use of clamps, in that they are uncomfortable to our patients. They excoriate the vulva and prevent accurate closure of the vaginal wound. They are liable to break in putting on. I have had one break twelve hours after operation, and it made the patient very nervous. For a man who is doing a good deal of work it becomes a question of expense. You have to use four to six or eight clamps, which have to stay in the vagina, usually surrounded with iodoform gauze for forty-eight hours, spoiling the polish on your instruments,

so that they have to be repaired and repolished. Therefore, in my judgment, if the ligature is equally safe and advantageous in other respects, it should be preferred.

In classifying the operations of vaginal hysterectomy I would divide them first into the hard and easy; for the easy operation there is no necessity for using clamps. The operation can be done without difficulty and without practically any danger. There is no reaction and the patients recover. The work can be well done with catgut ligatures, if any one prefers catgut, or with silk; then we can secure accurate coaptation of the vaginal wound. I see no reason why any of you should use a clamp on an easy case of abdominal hysterectomy, but on a hard case it is not always possible to get along with a ligature. The vagina is narrow, the uterus large, tubes adherent, and broad ligaments thickened. The question is, How far is it desirable in difficult cases to go by the vaginal route by the use of clamps and when to operate through the abdomen? There are difficulties in the way of the latter operation. The first difficulty is the increased danger of soiling the abdominal cavity and setting up sepsis. The second is increased shock. A very eminent operator in this country told me some months ago that he had entirely given up vaginal hysterectomy and had substituted abdominal hysterectomy for all cases of cancer. I had the case of a Spanish woman, a good deal reduced in strength, where it seemed it would be a difficult operation. I preferred the abdominal operation, and it was certainly quick and bloodless. I lifted the uterus out in twenty-three minutes from making the incision. It might have taken me twenty minutes more to finish the toilet and close the vagina and abdomen, and yet the patient died of shock. I do not believe that woman would have died of shock if I had removed the uterus from below. I desire to emphasize the fact that you cannot remove the uterus through the abdomen in my judgment with anything like the minimum amount of shock that occurs in removing it through the vagina. I throw that out as a hint for discussion. It is wonderful the small amount of shock we get where there is no hemorrhage to speak of in removing the uterus from below, while there is considerable shock in doing the operation from above. The operation for removing the uterus from above requires a higher degree of surgical precision, especially in the matter of technique, to avoid sepsis. It is an operation to be done only by those who have done twenty to fifty abdominal hysterectomies for fibroids before

they begin on cancers. It is harder; the cervix is large; vascularity is increased; it is more difficult to control hemorrhage, and more difficult to avoid the ureter. It is, therefore, not to be rashly adopted by any one who prefers to do it through the abdomen, unless the man be an abdominal surgeon of great experience. Many of these operations for cancer must necessarily be done by men of limited surgical experience. It is better for the average practitioner who can do some of the operations for cancer to do that one which he thinks best, and try to save the patient's life, than to let her die a certain death where he cannot send her to a surgeon.

DISCUSSION.

Dr. J. D. Griffith, of Kansas City.—I would ask Dr. Cushing, with regard to the position of the Spanish woman, whether it was the Trendelenburg position or not?

Dr. Cushing.—Yes. I think everybody will find it difficult to operate on a case of cancer by abdominal hysterectomy without the Trendelenburg position. I do not know how it would be safe for him to guard the peritoneal cavity against infection in any other way.

Dr. George F. Hulbert, of St. Louis.—I would like to have Dr. Cushing tell us those cases he would select for the abdominal and those for vaginal hysterectomy. What are the conditions to decide that point?

Dr. Cushing.—I should be inclined to select only such cases for the abdominal operation as would be difficult to do by the vaginal method. For instance, I had this summer the case of a woman, sixty-three years of age, in which the vagina was small and the uterus as large as a cocoanut, filled with a sloughing, stinking, malignant, degenerating growth. There was no choice of operation in such a case. It had to come out. Where the uterus is large, the vagina small, and there are adhesions, apparently of the tubes, and the abdominal wall is not too thick; where there is no such weakness of the heart as to imply shock, the abdominal operation, in the hands of an expert with the patient in the Trendelenburg position, is to be preferred. There is no doubt about that.

Dr. Griffith.—The reason I spoke of the Trendelenburg position was this: I have recently lost two cases in abdominal and pelvic work that I thought could not have died from anything else than from it.

In a series of twenty-four consecutive cases I have lost these two. They were not so desperate to deal with as some I had dealt with without the Trendelenburg position. I put myself in the Trendelenburg position for thirty minutes, and if any of you will try it for a short time, even without the assistance of the anesthetic, you will find that it produces marked shock. At the meeting of the American Medical Association I called Dr. Marcy's attention to it, and he said he had not thought of it, but that since I had spoken of it he was reminded of more than one case that had died after an operation in which he could not account for the fatal issue. I have found by experience that the Trendelenburg position is an exceedingly disagreeable one, and one that is not easily recovered from. I did not fully recover from it in less than two and one-half hours.

DR. HULBERT.—I asked Dr. Cushing a question in what cases we should elect the abdominal over the vaginal method, with a view of having as clear a conception as possible, and from the description given by Dr. Cushing it seems that the element to decide that point for him is his ability and the certainty with which the ligature can be applied effectively. It seems to me that if this is the condition of affairs, bearing in mind that we are endeavoring to place our ligatures as far from the uterus as possible, these cases are not suitable for operation at all. I doubt if a hysterectomy under these circumstances is of any value whatever, because it simply means that the neoplasm has got beyond any possibility of entire removal. If we cannot entirely, with a reasonable degree of certainty, remove the malignant tissue, we certainly do not resort to the operation of extirpation. There are cases of malignant trouble in which the uterine body is large, and in which the surrounding tissue is not involved, but the disease still confined to the uterus itself. It is purely a mechanical question in deciding between the two operations. If we have a uterus that is so large that we cannot with an ordinary effort extirpate it by the vaginal method, the case is suitable for an abdominal section. I believe that is the real solution of the problem. I certainly would not accept Dr. Cushing's idea if I am correct in quoting him.

DR. CUSHING.—The difficulties of working from below, to which I referred, were not owing to cancerous invasion of the broad ligaments, but in bringing the uterus down, which may be cancerous and covered by adhesions. By opening the abdomen you can see if the broad ligament is involved and avoid the cause Dr. Hulbert refers to.

DR. HULBERT.—In regard to the difficulties of the vaginal method contrasted with the comparative ease of the abdominal, I do not wish

to be understood as calling it an easy operation. I think it is the most difficult operation that falls to the lot of the pelvic surgeon.

DR. L. S. MCMURTRY, of Louisville.—This is a subject of practical interest. The operative technique in vaginal hysterectomy has been brought to a high degree of perfection. The operation is now done with uniformly good results as to the operation itself. It is a difficult operation to perform. The recurrence is in proportion to the stage of the disease and its thorough extirpation. Late operations here do harm by the discredit thrown upon good surgery. The best immediate and ultimate results obtain in cases where the family physician recommends operation as soon as the first symptoms are made known.

DR. CUSHING.—In regard to the Trendelenburg position I acknowledge the danger, especially if the patients are let down suddenly. They should be let down slowly. I wish also to say that if you have to do with the removal of a cancer through the abdomen the increased danger of infection without the Trendelenburg position is sufficient to justify the use of it, even if there is some increased danger of shock in letting the patient down.

CONGENITAL DIAPHRAGMATIC HERNIA; REPORT OF TWO CASES.

By HENRY T. MACHELL, M.D.,
TORONTO.

On the 27th of January, 1879, I saw Mrs. W., who was in labor with her first child. She said she had had pains regularly for about an hour, and that the membranes had ruptured. On vaginal examination the occiput was found presenting in the first position. The case progressed favorably, and in another hour the child was born.

There was nothing noticeable in the appearance of the child, except possibly a slightly purplish color of the face. After making it cry out and tying the cord, it was given to the nurse, when I turned my attention to the mother. Within a minute or two the nurse cried out, "Doctor, the baby is dying," and it certainly looked like it. The face was pale and cadaverous, and on taking the infant into my hands it could not be seen to breathe, nor could its heart-beat be felt. After shaking and spanking it and keeping up artificial respiration according to Howard's method for a short time, it commenced to breathe and cry out. Just at this time, and while my hands were still grasping the chest, I noticed that the heart-beat was absent on the left side while it could be felt distinctly with the left hand just beneath the right nipple. The apex struck more forcibly against the ribs than is usual in newborn babies.

Within five minutes it seemed to be breathing pretty well. In a few minutes more it appeared to be labored, and every fifth or sixth respiration seemed to be three times as long as the others. When shaken or spanked it breathed more freely than when left alone, and the color of the face was not then so dark as when it was quiet and undisturbed. During the time I was at the house, after making the mother comfortable, I turned my attention to the baby half a dozen times or more; and just as many times it relapsed into its

former blue color within a few minutes after being transferred to the nurse.

On making my next visit I learned that the baby lived only three hours. As the father had been told that there was probably some abnormality of the heart, he readily agreed to a post-mortem examination.

Dr. I. H. Cameron and myself made the examination twelve hours after death. On opening the chest and turning back the sternum the first thing that presented was a mass of intestines coiled up in the upper part of the left chest. Further exploration showed that this mass was composed of the stomach, the whole of the small and at least a foot of the large intestines, and that these had forced their way into the chest through an opening in the diaphragm. This opening was large enough to admit three fingers, was oblong in shape, and situated near the outer and posterior part of the muscle on the left side. The edges of the hernial opening were firm, rounded, and strong, and could only be torn by using undue force. The opening was not the result of a rupture or tearing of the muscular fibres; it was simply due to arrested development at that particular spot. The remaining part of the diaphragm was firm, strong, and of usual thickness.

Just beneath the nipple on the right side could be seen a dark mass—the heart. It was merely displaced. Above and behind the heart were the lungs. The whole of the left one was pushed over into the right side of the chest by the intestines. It was about half the usual size, and so dense that it sank at once when placed in water. The right one was smaller than normal, but crepitated and floated.

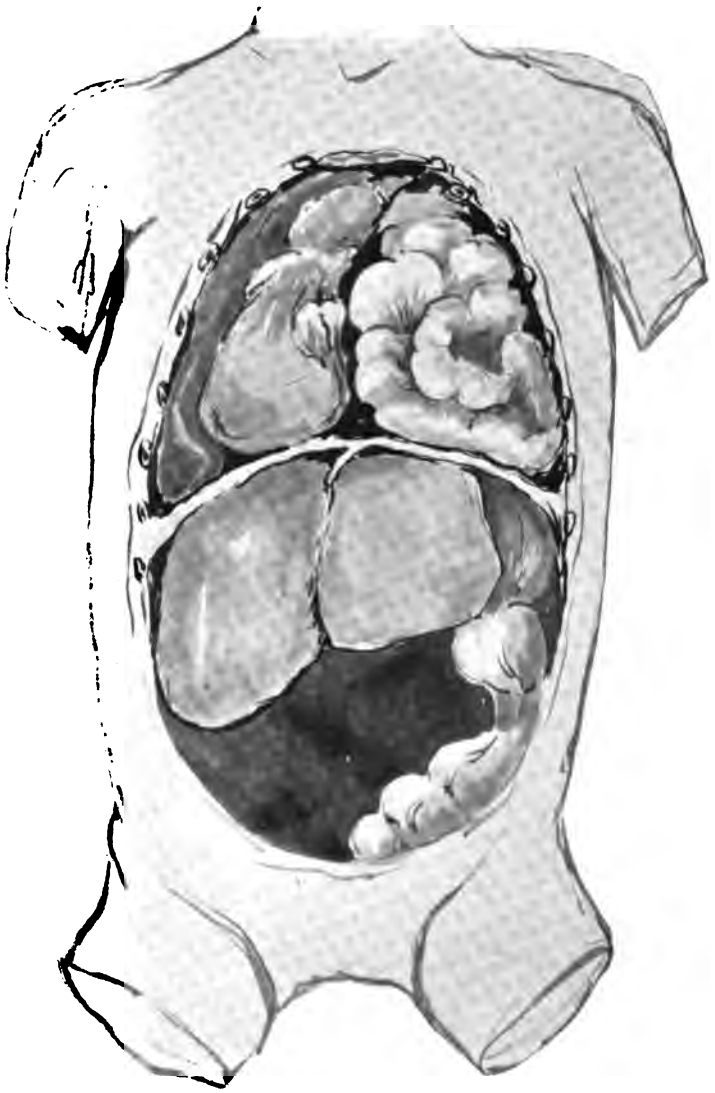
The other organs appeared to be normal, though the diaphragm on the right side was slightly adherent to the upper surface of the liver.

No other abnormality was noticed.

Plate I., by my friend Dr. Nevitt, gives one a very good idea of the condition found.

On the 6th of September, 1893, I attended Mrs. E. in her fourth accouchement. The labor was an easy one, lasting only five or six hours, and she had only one expulsive pain—the one which brought the baby. The child cried lustily just as he was born. He weighed nine pounds, was well nourished, a good color, and looked the picture of health.

PLATE I.



After he was separated from the mother, rolled up, and put on the other side of the bed, I noticed that he kept up a little moan—very much like the expiratory moan of pneumonia. This moan was not quite constant, but nearly so. If the baby were taken up or turned on his side, the moan would cease for a few seconds, and then begin again. I did not say much to the mother about the baby when leaving, thinking the moan was probably the result of the squeezing it received in its passage through the birth-canal, yet I could not get over the fact that the labor was a very easy one. I suggested for the baby a few drops of whiskey.

Ten hours afterward I saw the baby again, and was told that the moan had continued and was steadily getting worse. I advised a dose of castor-oil, and if the moan should continue after the bowels were well evacuated to give drop doses of paregoric every hour for three or four doses. The moaning became steadily worse until death, fourteen hours after birth.

The parents readily allowed a post-mortem examination. On undressing the baby I was struck by the full, apparently abnormally developed chest, as well as the scaphoid abdomen. The nurse had noticed this also when washing the baby, but did not think it of any consequence, and therefore said nothing about it.

On removal of the sternum two coils of intestine were to be seen occupying the normal cardiac area. The heart was pushed over entirely to the right of the median line. The right lung was not to be seen at all, and the left one, very small and flattened, occupied the upper and extreme right part of the left chest. On further investigation, I found the left chest well filled with intestines.

I then opened the abdomen, and at first glance it seemed as if the only organ in it was the liver. The large bowel was then seen extending in almost a straight line up the left side of the abdomen to the diaphragm. Its actual measurement in the abdominal cavity was four and one-half inches, and this was the whole of intestine (large or small) in the abdominal cavity. The stomach and all the small intestine and large one (with the exception of the four and one-half inches above mentioned) had passed through an opening in the left lateral and posterior portion of the diaphragm large enough to admit two fingers. In addition there was the whole of the spleen, the left supra-renal capsule, and the upper end of the left kidney. The large bowel and kidney so plugged the opening that considerable

traction had to be made on the kidney before I could either insert a finger or bring the bowel down again by traction. The kidney was evidently the last organ to be drawn up toward the opening, and when finally freed could be readily moved upward and downward fully an inch and three-quarters. (See Plate II.)

In the first case, which lived only three hours, cyanosis recurred every five to ten minutes and disappeared as soon as the child was made to cry. This and the somewhat frequent respirations and misplaced apex-beat were the only symptoms observable.

In the second case the prominent symptom was the moan or grunt with expiration, indicative of pain or distress. There was an absence of cyanosis, except of the scrotum, until within an hour or two of death. Why, in this case, with a large hernial opening and a pleural cavity filled to overflowiug with abdominal organs, there should be no cyanosis, while in the first case, with a comparatively small opening and less displacement of abdominal contents into the chest, there should be such marked cyanosis, I am at a loss to understand.

Dr. Anna E. Broomall, of Philadelphia, reported a case of congenital diaphragmatic hernia in the July number of the *American Journal of Obstetrics*, 1879. It was very similar to my first case. Cyanosis was the only symptom. The child lived only ten minutes. (See Plate III.)

H. L. C. Carruthers also reports a case in the London *Lancet* for October, 1879, of a child born in India. Labored breathing was the main symptom noted in this case, which lived eleven days.

Paterson, in the *British Medical Journal*, December, 1888, also reports a case.

These three cases are the only ones of which I can find any record since January, 1879, the date of my first case. One must, therefore, conclude that they are comparatively rare. They show, however, the necessity of making an effort to obtain a post-mortem examination in all obscure cases, *even* if the patient is only a baby a few hours old.

PLATE II.

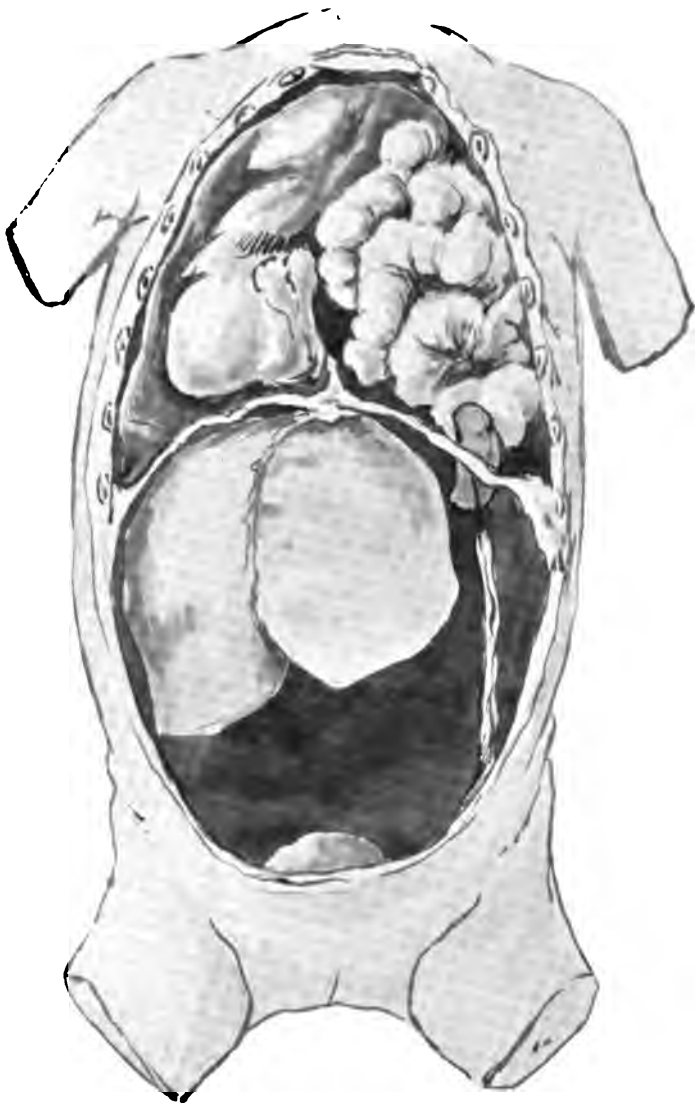
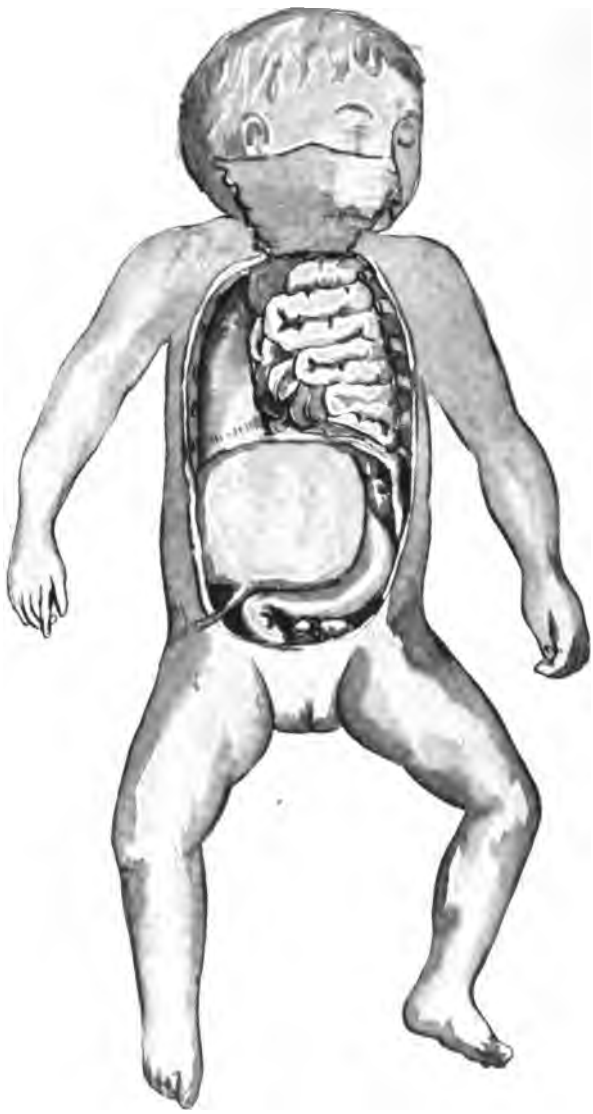


PLATE III.



THE RELATION OF HYSTERIA TO STRUCTURAL CHANGES IN THE UTERUS AND ITS ADNEXA.

By AUGUSTUS P. CLARKE, M.D.,
CAMBRIDGE.

The paroxysmal phenomena designated by the term hysteria were recognized by the ancients as occurring in the human female. Hippocrates was not unacquainted with some forms of this affection. Celsus seems to have regarded the manifestations of the symptoms as having their origin, in part at least, in the uterine system. Oöphoria is a term that has been employed to embrace the idea that the disease has its seat in the ovaries. The teachings on this subject by the late Professor Charcot favor the same view as to its nature and development. Notwithstanding this consideration of the subject, and the many clinical observations and valuable data obtained by recent experiences in abdominal section and pathological investigation, authors of recognized ability and of reputation still refuse to admit that the production of hysteria is in any way dependent on the sexual system, but hold that it is due to influences arising from a perversion of sensation occurring in the distribution of the nervous force, and to an irregularity in the development of the excito-motory energy of the organism generally. Much of the confusion and complexity into which the knowledge of the subject has been brought have evidently grown out of the vague theories and unscientific deductions of the old metaphysicians, whose philosophy is still to some extent a bar to the advancement of medical science.

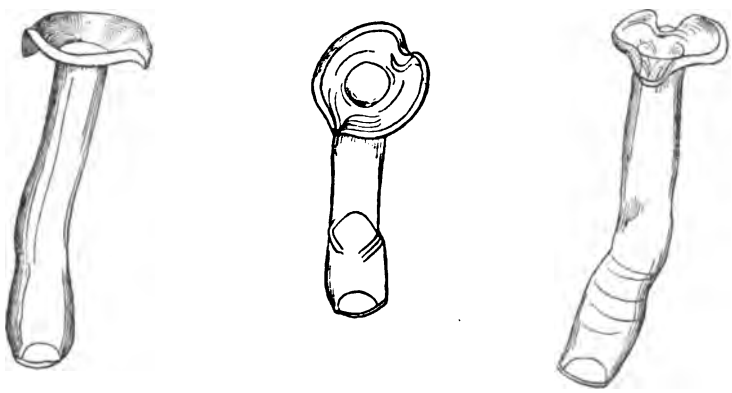
Having early in my practice become interested in the subject of hysteria I began to make special observations. I had noticed that a number of girls who suffered more or less during the menstrual periods exhibited at times marked symptoms of hysteria. Out of a series of twenty cases presenting indications of such a peculiar type of nervous disturbance I was able to diagnosticate in sixteen

well-pronounced features of anteversion of the uterus. In three of the cases anteflexion was unusually severe. Another interesting phase observed in those cases was the position of the ovaries. In a larger series of such cases prolapse of an ovary into Douglas's cul-de-sac was not an infrequent occurrence. When prolapse occurred it was not always on the left side; ovaritis and prolapse on the right side gave rise to symptoms usually more severe than when the morbid condition appeared on the left side. This can, perhaps, be easily accounted for, since it is a well-settled fact that Douglas's pouch on the right side is somewhat smaller than on the left, and there would be, of course, a greater compression on the ovary from the surrounding tissues than there would be when ovaritis and prolapse take place on the side in which the pouch is larger.

In one case of hysteria, that of Miss E., aged nineteen years, the cervix appeared in a normal position while the corporeal portion of the uterus was flexed forward; in another case, that of Miss C., aged twenty-one years, there was a marked anteflexion of the cervix and the body of the organ. In the record of a case which I saw in consultation with the late Dr. Edgerly I find there was a preternatural flexure of the fundus, though the cervix was not in an abnormal position. The patient's age was twenty-two years; she had suffered from hysterical paroxysms and from vesical irritation, evidently superinduced by the faulty position of the uterus. A Hodge pessary afforded temporary relief; the essential symptoms of the nervous seizures, however, were not overcome until we had recourse to rapid dilatation of the uterine canal. This measure of treatment had the immediate effect of shortening, and thus straightening the organ, and of overcoming the local and general nervous excitation. Retroversion and retroflexion often give rise to nervous phenomena. Besides the constipation and tenesmus vesicæ, each of these lesions of the uterus may be accompanied by neoplasms and by a hyperplasia of the pelvic cellular tissue. Women of the hardier type, or those who have descended from a long line of ancestors possessing in an uncommon degree a muscular development, may escape the sufferings these conditions impose on those who are the offspring of an opposite class. It is surprising to witness what a morbid train of nervous symptoms may be sometimes engendered by the occurrence of only a slight displacement of the uterus backward.

During December last I was consulted by Miss B., a bright and

energetic but nervous woman, who presented symptoms that could be clearly classed as typical of genuine hysteria. Her parents were free from indications of having suffered from any forms of neurosis. Her age was twenty-seven; she had been a teacher of excellent standing in one of the public schools of the higher grade. She attributed her illness to over-exercise and to a too close application to professional work. She had for four months been under treatment by the methodical use of electricity and by the use of remedies for nervous exhaustion. I suggested a treatment by the employment of an anesthetic and a thorough exploration of the genitalia; this she finally accepted. The patient was placed in the dorsal posture, the parts were well irrigated with a warm sublimate solution; the uterine canal was dilated, and a firm glass drainage-tube was introduced and



kept *in situ* by tampons of iodoform gauze. The tube was employed not only for the purpose of maintaining drainage, but also to prevent the uterus from lapsing into its former position. At a later date I employed a Hodge pessary. After the expiration of three months the patient was dismissed entirely cured; she was able to return to her former professional duties, though she had been absent and under treatment without improving for a year before she came under my charge. Hysteria may occasionally be dependent on some odd forms of procidentia uteri, on laceration of the cervix or of the perineum; it being so easy, however, to recognize these conditions, and to overcome them, it seems scarcely necessary to devote further time for their consideration. Gonorrheal inflammation involving the Fallopian tubes and the ovaries may be prolific of hysteria. Such

inflammation may assume a latent phase, and so become chronic before the gravity of the special morbid processes has become fully recognized.

It is in this class of cases that hysterical paroxysms are liable to occur. Morbid processes continuing for some considerable time in the delicate stroma of the ovary are liable to give rise to such mechanical or physical constriction in the parts involved as to set up at intervals an irregular reflex irritation that may extend through the medium of the spinal nerves and the sympathetic ganglia to almost every part of the entire organism. The injurious effects of a gonorrheal attack were well exhibited in a case to which I was called with Dr. G. W. Jones, of Cambridge, April 24th. The patient was Mrs. J., aged thirty-five years. Her *embonpoint* was well marked. She had led a rather dissolute life; she had had several miscarriages. She had suffered from ovaritis and pelvic peritonitis. The ovaries and tubes on both sides were seriously implicated, but the prolapse and adhesions on the right side were the more severe. The hysterical phenomena were of the pronounced type. The history of the case showed that these symptoms began soon after the onset of the local lesions. Salpingo-oöphorectomy through an abdominal incision ameliorated to a considerable extent the nervous outbreaks, although the improvement in this direction at first was slow, owing, doubtless, to the patient's impulsive disposition and to her incorrect habits of living. It has often been observed that whatever exercise or physical exertion tends to increase the local lesions serves also to intensify the reflex movements. I am not unaware that attacks of hysteria have been regarded as occasionally occurring in man. In answer to this it may be said that though the opposite sex is subject to perturbation of the nervous forces, it does not militate against the view that this peculiar manifestation of the nervous energy is for the most part, if not entirely, dependent on derangement of the genitalia. The age at which hysteria occurs favors the view that the disease takes place during the period of the greatest activity of the genital organs. The disease that sometimes occurs in males has, it is true, an apparent resemblance to hysteria, but its greatest manifestation is not developed until later in life.

The mental depression, the sobbing, and the emotional disturbances occurring in men during their second infancy should not be

regarded as any form of hysterical attacks, but as the result of damaged or decaying cerebral centres. The fact that hysteria often breaks out at or during the menstrual period favors the conclusion that its manifestation is due to lesions connected with the uterine system. A severe strain at that time put upon these sensitive organs may, when they are but even in a slightly abnormal condition, set in motion reflexes that may culminate in explosive attacks. Temperament, occupation, and climate may to some extent act as exciting causes; but these agencies can hardly be considered as being capable of superinducing hysteria. An hereditary predisposition to nervous complaints would, at first thought, seem to be sufficiently adequate for a determining cause, but my own clinical experience, as carefully recorded, fails to recognize the influence of such a taint. Writers, for the most part, have been too often prone to associate hysteria with malnutrition of the nervous system, and to regard the manifestation of the disease as the result of a disturbance of the balance between the voluntary and the involuntary powers, and to consider that the derangement may be brought about by many different and even opposite causes. In arriving at conclusions the causes of chorea, epilepsy, and certain forms of insanity should sometimes be brought into consideration. In diagnosticating chorea and epilepsy the existence of certain factors has usually been deemed to be essential; in the absence of some such supposed factors the disease has sometimes been pronounced an attack of hysteria. In the more aggravated forms of distorted nervous balance it is true we may have special features dependent on a morbid or perverted condition of the sensorium; this may present itself in the form of hyperesthesia, dysesthesia, anesthesia, analgesia, and the like.

I will not here enter upon a discussion of the question as to the place or importance these particular symptoms should hold, or whether the existence of such perverted sensibilities should be regarded as morbid processes having in all cases a definite and original seat. Suffice it to say, that later observations and our daily clinical experience in the practice of gynecology justify the restricting of the terms hysteria and hysterical phenomena to much narrower limits in the sphere of invasion of nervous affections than formerly. The older writers, as heretofore remarked, were inclined to indulge in too much metaphysical speculation; their descriptions were often overdrawn.

The causes of hysteria prevailed more in their theory than in their actual practice. I shall never forget the results of an autopsy made by Dr. Holt on the body of Miss G., aged thirty-six years; she died of acute pleuro-pneumonia. The uterus was found to be in a marked state of anteversion; a calcareous growth of the size of a walnut was found in the right ovary. This impinged upon the Fallopian tube and parts immediately adjacent. All the other tissues of the reproductive system appeared to be in a normal condition. In these later days of brilliant work in abdominal surgery the growth could have been successfully removed. This patient had for a long period of her life been a confirmed subject of hysteria.

It seems hardly necessary to report further instances of cases like this; the achievements of the gynecologist and abdominal surgeon are now well recognized. His attainment to the greatest proficiency in the diagnosis of obscure lesions in the genitalia has proved to be all important in the solution of the question before us. Vaginal and rectal examination after the patient has been placed under the influence of an anesthetic, and in the dorsal posture, is almost sure to reveal the condition and position of the adnexa. Prolapse of the ovaries and adhesions of the adjacent parts can now be recognized as frequent sources of perverted sensation. Other morbid conditions connected with the uterus or with the appendages on one or both sides can, in most instances, be easily detected.

The history and symptoms often furnish much light. By keeping in mind all the various helps that can be brought to our service, differentiation of diseased processes may be established with wonderful accuracy. The old lines of speculative reasoning no longer obtain; the alienist and neurologist desirous of maintaining their position find it necessary to call to their aid the services of the abdominal surgeon. From my own observation and experience gained in conducting the treatment of cases of hysteria the following propositions have been formulated:

That in a large proportion of cases of genuine hysteria there exists some distinct and tangible lesion of the uterus, appendages, or of parts immediately connected, and that the hysterical phenomena resulting from such organic disturbance will not yield until definite measures have been instituted for overcoming the original malady.

That in some cases impoverishment of the blood and other constitutional influences may give rise to paroxysms of hysteria.

That these attacks are often transient, much more mild, and, when properly treated by constitutional measures, may disappear altogether.

That in those more obstinate cases of nervous perversion, in which there may exist to a greater or less extent hyperesthesia, dysesthesia, anesthesia, analgesia, and the like, the disease may not be necessarily dependent on factors giving rise to the disease in question, but may be of the nature of epilepsy or of insanity, or be dependent in whole or in part on morbid processes connected with some portion of the sensorium.

That the diagnosis of such cerebral lesions will be strengthened when, in the absence of a manifest organic disturbance of the genital tract, there is a history of a severe blow or injury to the head, or of influences or factors which have produced a profound or prolonged impression on the encephalic centers.

That in hysteria, on the other hand, none of these conditions exist; the phenomena are merely the result of reflex movements which occur for the most part during the period of the greatest activity of the organs of reproduction. That at such a time a seemingly limited amount of tumefaction, or an adhesion of a tube or an ovary, or an adventitious change in the shape or relation of the uterus, is capable of effecting constitutional as well as local disturbances of the nervous centers.

That though hereditary predisposition may to some extent be an exciting cause of hysteria, such an influence as an original factor should nevertheless be regarded as unimportant.

That when hysteria occurs later in life it is *prima facie* evidence that the genital tract has become diseased or has taken on a preternatural condition.

That, if after careful examination such a diagnosis of local physical obliquity cannot be established, we should, though the patient suffers from perverted sensations referable to the nervous tracts, be suspicious that disease has taken lodgment in some portion of the encephalon or the organism under a more immediate control of the central nervous system.

INTERCURRENT TYPHOID FEVER IN PREGNANCY.

By THOMAS E. McARDLE, M.D.,
WASHINGTON.

I was called to see Mrs. C. on January 3, 1893, on account of a supposed indigestion, resulting from imprudence in eating and walking during the holidays. She was then in the third month of her first pregnancy. Her health had always been good, although she was not of a robust constitution. Indeed, she was of a nervous, emotional temperament, much given to church duties, always bustling, always going. I never knew her to walk up stairs; she always ran up them. The only illness, however, that I had known her to have in ten years was a severe attack of tonsillitis shortly after her marriage. When called to see her in January I found her suffering from a remittent fever, the exact character of which I did not make out until about the third day, when I became convinced I had to deal with a case of typhoid fever complicated with pregnancy at the third month. At my suggestion Dr. W. W. Johnston saw the patient with me in one consultation and confirmed my diagnosis. I continued to attend the patient from January 3d until February 10th, when I pronounced her well. Altogether she was ill about six weeks. During that time the fever ran a fairly typical course, never rising above 105° F. The bowels were neither loose nor constipated. The urine contained 2 or 3 per cent. of albumin. There was a very distressing cough, which gave patient and doctor considerable annoyance. But the most alarming symptom, barring the pregnancy, was a weak, rapid heart. For days I counted 160 beats to the minute, and when it finally reached 120 I was comforted. As I have just said, on the 10th of February I pronounced her well. She was able to sit up, was eating solid food in small quantities, her bowels were regular, her pulse good, and her urine normal. Four months and a half afterward, on the 25th of June, I delivered her

of a fine boy-baby. The delivery was easy and natural, and mother and son both did well, and have continued to do well ever since. Maternity has changed the characteristics of Mrs. C. from the nervous to the sanguine temperament.

This short narrative of a, to me, very interesting case may serve as an introduction to the study of typhoid fever complicated by pregnancy. Though, says Antoine Petit, pregnancy exposes women to various disorders, it also protects them from many very dangerous diseases, arrests the progress of others, and sometimes even cures those with which they were previously afflicted. In commenting on this proposition, which, though asserted almost as a maxim by the author quoted, is unfortunately far from being strictly true, Cazeaux says that Antoine Petit was, indeed, strangely deceived in his appreciation of the influence of pregnancy upon acute diseases existing before it or occurring during its progress. Still, Cazeaux further remarks, as many physicians partake of this error, we have thought it right to notice it at the outset. But that was twenty years ago. We all know that pregnancy has no power to render inert the germs of disease that find a nidus in the human economy. The pregnant woman is as liable to an incursion of disease as the non-pregnant female. Her condition affords her no immunity. One can see that a theory of immunity, if true, would be a beautiful illustration of Nature's desire for the propagation of the species. As, for example, if I may be allowed to diverge for a moment, a curious fact is mentioned by Van Buren and Keyes in connection with epididymitis (showing the boundless kindness of Nature in doing everything to preserve the genital function impeded), namely, that the testicle does not atrophy, no matter how long its duct may be occluded, and if the latter finally becomes pervious, the testicle is ready for use. Modern surgical gynecology has the tendency to teach us that the contrary of this is true in woman. It would seem that unless great skill and care are taken in the treatment of women, even of many of her minor ills, the dread of sterility looms constantly before us. Murchison, it is true, has stated that, according to Rokitansky and Niemeyer, pregnancy confers almost entire immunity from enteric fever; but the correctness of this opinion has been denied by Forget, Jenner, Griesinger, and others. Murchison declares, too, that he himself has met with many instances of pregnant females attacked by the disease. According to Gallabin, any zymotic disease may occur

during pregnancy. But, he adds, in general the pregnant woman appears to be less liable than others to the outbreak of a zymotic disease; while, on the other hand, the puerperal woman is much more liable. This rule, however, does not apply equally to all diseases. It is most marked in the case of scarlatina, and probably less marked in that of smallpox. And so quotations might be made almost indefinitely on one side or the other with regard to the pregnant woman's immunity from certain diseases. But the great weight of authority and the principles of pathology would lead us to believe that the pregnant woman enjoys no such immunity.

I have collected numerous data and many statistics relative to the frequency of enteric fever as an accidental complication of pregnancy, and the prognosis for mother and fetus when the pregnant woman contracts enteric fever. A summary of these facts and figures would go to show that the existence of pregnancy has no effect whatever upon the increase or decrease of the percentage of women afflicted by the disease. But the question of prognosis is somewhat more complicated. The gravity of the pregnant state is undoubtedly increased by the presence of any severe zymotic disease. Most zymotic diseases are apt to lead to premature labor or abortion. There are three elements which may tend toward this result: First, the death of the fetus from the high temperature; secondly, the effect of the severity of the disease upon the mother; thirdly, the effect on the mother of the special zymomic poison concerned. That the third element is actually operative is proved by the special tendency of smallpox to produce premature labor, even when it runs a mild course and when the child is born alive. Enteric fever leads to premature labor or abortion in the majority of cases. The interruption of pregnancy generally follows at the time when the temperature ranges the highest, and the prognosis is rendered more grave in consequence. Severe hemorrhage is apt to follow after abortion in the earlier months, and it has been thought that the prognosis of the disease is on this account more grave at that time than in the later months. Griesinger observed enteric fever in five pregnant women; all aborted, and three died. In eighteen cases in the hospital at Basle, reported by Liebermeister, abortion or premature labor occurred in fifteen, and of these fifteen six died. Charpentier gives a table including three hundred and twenty-two cases collected from various authors; in one hundred and eighty-two of the number abortion or premature

labor occurred. He also states that when premature labor results the child may be stillborn, or if born alive it is feeble, and death may occur, preceded by symptoms of enteric fever. Reynolds says that when enteric fever occurs during pregnancy it is followed by miscarriage in all but the most extremely mild cases, and even in those the life of the child is rarely preserved. The prognosis for the mother is only altered by the fact that to the exhaustion of enteric fever is superadded the exhaustion of parturition and the puerperium; but this factor may be sufficient to turn the scale, and always increases the gravity of the prognosis, which becomes worse as the advancement of pregnancy augments the exertion of labor. Jaggard, in the *American Journal of Obstetrics*, 1889, thus states the causes of abortion or premature labor in a pregnant woman suffering from enteric fever: 1. Elevation of maternal temperature causing death of the fetus by insolation or its premature expulsion by thermic irritation of the uterine musculature. 2. Hemorrhagic endometritis. 3. Depression of maternal blood-pressure with asphyxiation of the child. 4. It has been proved that the bacillus of enteric fever may pass into the blood of the fetus. That is to say, the child may die of enteric fever, and being dead may be expelled as a foreign body from the uterus. The child may die of suffocation, owing to the lowering of the maternal blood-pressure due to the violence of the disease and the otherwise exhausted condition of the mother. As for the hemorrhagic endometritis as a cause of fetal expulsion, it may be well to state that Scanzoni taught long ago the existence of acute uterine catarrh as an accompaniment of certain general diseases in which a violent fever is observed. He had frequent occasion to observe the disease in its most marked form, upon the cadavera of young girls of six or eight years who had died from the exanthemata. Finally, hyperpyrexia in the mother may act like a stroke of the sun upon the child, thus terminating its existence, or the muscular walls irritated by the intense heat of the fever may contract and expel the contents of the cavity.

Intercurrent typhoid fever in pregnancy is to be treated in the same manner as if the pregnancy did not exist. In other words, the treatment, according to Reynolds and all other authorities, is unaltered, except that the question of the induction of labor becomes a prominent one. It may be taken for granted in all but the most extremely mild cases, say some authors, that the life of the child is

necessarily to be lost, and it is, therefore, evident that the physician's chief object should be to secure the occurrence of labor at that period of the disease at which it will be least harmful to the mother. It is, on the other hand, extremely unwise to subject the patient to the fatigue of a prolonged or difficult induction of labor; but at the same time it is better for her to undergo the exhaustion of parturition at a period when her vitality is still comparatively good. The exact period, however, at which labor should be induced must be determined in each case by a careful consideration of the mother's condition, in connection with the probable behavior of the uterus during the induction of labor, an estimate of which can be obtained only by a vaginal determination of the rigidity of the cervix and the degree of irritability of the uterus, these facts being considered in connection with the past history of the patient, if a multipara. The occurrence of a spontaneous miscarriage is always to be hoped for as much the more favorable event. Gallabin does not quite agree with these sentiments, but, on the contrary, says that labor should not be advised in any case, for the puerperal state is much more unfavorable than that of pregnancy, and, therefore, the longer abortion or premature labor is deferred, the better it is for the mother. From my own limited experience in one case I should be inclined to await the spontaneous occurrence of abortion or miscarriage, for if my first case was exceptional in going on to a safe delivery, my second patient may hope for equally good results. My case was neither extremely mild nor extremely severe in character. I have but little doubt if the evening exacerbation had continued at 105° for many days that my patient would have been overwhelmed by the violence of the fever, and abortion would have been the result. But fortunately such was not the case. I regret that the record of pulse and temperature has been lost. It would certainly have added much to the interest of this report. When we consider the rapidity of the pulse and the weakened heart-action, together with the presence of from 2 to 3 per cent. of albumin in the urine, we cannot but wonder that the woman did not abort, from the fact that the child is so often destroyed by asphyxiation due to the depression of the maternal blood-pressure.

VAGINAL FIXATION IN THE TREATMENT OF THE RETRO-DISPLACEMENT OF THE UTERUS.

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For the purpose of this paper it is assumed that a retroflexion, or a retroversion, of the uterus is a pathological condition that requires treatment on account of pain, both local and reflex, or on account of disturbed function, such as dysmenorrhea, menorrhagia, or sterility; and while it is true that in a small proportion of cases of retro-displacement in unmarried women no untoward symptoms are manifest, the rule holds good that no woman may expect to remain well long unless her uterus is somewhere near its normal position.

As far as keeping the uterus in its normal position is concerned, and thereby relieving the disagreeable symptoms, I have successfully treated many hundred women with the various modifications of the Hodge pessary. Many of these women have been under observation from three to six years, and at the end of from two to three years the pessary has been removed as an experiment, to determine if the uterus will retain its normal position without artificial support. Certainly not 5 per cent. remain normal after removal of the pessary. In all cases the pelvic floor has been repaired where the woman has suffered injury to the part. The vaginal pessary, then, in the treatment of retro-displacements of the uterus, must be placed in the category with wooden legs, spectacles, and ear-trumpets—mainly as an aid to render life more tolerable and comfortable, and not as a means for permanent cure.

I have done Alexander's operation several times, but have not been successful with it, and it has never become popular among operators, probably for the same reason.

I have opened the abdomen and fastened the body of the uterus

to the anterior abdominal wall in at least twenty cases, mostly in connection with the operation for the removal of diseased tubes and ovaries, and have been pleased with the results.

How large a proportion have proved an absolute cure I am unable to say, for many of the patients came from long distances, and were not again seen after their convalescence; but among those who have remained under observation the results have been satisfactory. I do not know of a case that has since borne a child, and cannot, therefore, say what effect pregnancy would have on the fixation.

Opening the abdomen for the purpose of curing retroversion seems to most patients, and to most doctors, a severe and unwarrantable procedure, and surely there ought to be little wonder that this view should be taken.

While in Berlin last summer, Prof. August Martin kindly demonstrated for me an operation that is called vaginal-fixation of the uterus, which strongly impressed me on account of its simplicity, and because it fulfilled so completely the indications.

The woman is placed in the lithotomy position at the edge of the table, a Simon's speculum introduced, the perineum retracted, and the uterus drawn down to the vulva. A strong uterine sound is introduced into the uterus and the organ held by an assistant in a condition of anteversion.

An incision is made with a knife directly forward in the middle line from the cervix toward the urethra for two inches, the incision extending only through the vaginal tissues. The vagina is separated from the bladder on either side of the incision for half an inch, and the bladder is then pushed off the anterior wall of the uterus up to the peritoneal reflexion. This part of the operation is much facilitated by seizing the anterior wall of the uterus with a bullet-forceps, drawing it down and steadying it. The bladder is then easily pushed upward and forward out of the way, a suture of silkworm-gut is now introduced through the muscular wall of the vagina on one side of the incision an inch and a half from the cervix, then through the anterior wall of the uterus, and out through the muscular wall of the vagina on the opposite side. The ligature is then tied and buried. A second suture is introduced in like form a half-inch lower down, and the incision in the vagina closed throughout with silkworm-gut.

The result is that the anterior wall of the uterus is drawn over and fastened to the anterior wall of the vagina, the bladder being pushed upward and forward.

During the past eight months I have done this operation twelve times, and have been greatly pleased with the results. Most of the operations have been done in conjunction with the repair of the cervix and perineum. Given a case of retroversion with a laceration of the cervix and perineum accompanied with endometritis, the following plan is pursued:

The woman is kept under observation for two or three weeks before any operative procedures are undertaken. The uterus is carefully and thoroughly replaced while the woman is in the knee-elbow position, glycerin tampons are used, and this process repeated every forty-eight hours. As soon as it can be done safely a well-fitting Hodge pessary is introduced and the uterus kept well forward. Thus the question of the mobility of the uterus and the condition of all the pelvic organs and tissues is clearly defined.

If all goes well, at the end of three or four weeks the patient is properly prepared by rectal and vaginal douches, and the uterus is thoroughly curetted, the cervical rents freshened, and the silkworm-gut sutures introduced but not shotted.

The vaginal fixation is next done, and afterward the perforated shot, each with a small tag of black silk attached, are run upon the silkworm-gut sutures in the cervix, compressed, and the sutures cut off flush with the shot. The perineum is then repaired after Tait's method, which I am firmly convinced is far the best, the silkworm-gut and the perforated shot with black silk tags being again used.

The next step I consider of importance, as it has much to do with the success of the plastic operations and the ease and comfort of the patient during convalescence.

To each ounce of fresh well-made zinc ointment is added a grain each of morphine and cocaine. Two teaspoonfuls of this ointment are introduced into the vagina and thoroughly spread over the parts with the finger. A small teaspoonful is also introduced into the rectum. By this plan the local smarting and pain are rendered tolerable, and as the ointment escapes from the vagina the new perineum is kept covered and protected from the urine, none of which can pass into the vagina.

Except in cases of offensive vaginal discharge accompanied by

fever, no vaginal injections are permitted for eight days, but the external parts were frequently douched with warm carbolized water, which is followed by an application of ointment over the new perineum.

On the eighth day a vaginal injection of carbolized water is given, and now, by catching up the tag of black silk thread attached to each shot, the shot and ligature are brought into view. One side of the ligature is cut, and the loop removed with the least possible pain to the patient and without disturbing the newly united surfaces. Ten days later a small Sims's speculum is introduced and the stitches in the vagina and cervix removed. In one case only has suppuration of the buried sutures occurred, but notwithstanding this the union between the vagina and the uterus remains firm and the uterus retains its normal position. I have thought best in all cases to have the patient wear a small Hodge retroversion pessary for the first three months after the operation, in order to assist in keeping the uterus well forward until union becomes firm at the site of the buried sutures.

Manifestly, if the uterus can be kept sufficiently far forward so that the pressure of the small intestine is against the posterior wall of the organ, it will require but little force to keep it in place. If the uterus and vagina are made aseptic, there should be no more danger from this operation than from any other of the plastic operations about the vagina.

Injury to the bladder would appear to be the most probable accident, but with a little care and the exercise of ordinary skill this is easily avoided.

What has struck me as the most remarkable thing about the operation is that the patients do not complain of any irritation or pain about the bladder, which would naturally be expected when it is remembered that a considerable dissection is made of the tissues lying between the vagina and the bladder and the uterus and the bladder.

It is yet too soon to decide upon the real merits of this procedure, but judging from the good results observed thus far I think we are warranted in giving it a further trial.

I do not believe that the operation will prove successful where the uterus is large and heavy, or where the woman has suffered enough injury to the pelvic floor to permit the pelvic contents to sag much, and I therefore strongly advise any one who contemplates this operation, first, to replace and keep in position the uterus for a month; to

curette this organ thoroughly when advisable; to repair the cervix and pelvic floor should this be required; and to keep the uterus in a state of anteversion by means of a pessary for several months after the operation as a matter of safety.

Several years ago, in a communication to this Association, I advocated the claims of catgut as a suture. I now only use catgut for ligature where the parts are infected by pus. In plastic surgery it is not so reliable as silkworm-gut, which I now invariably use for such work.

In the preparation of catgut I have recently carried out an idea that appears to me to be of considerable practical importance.

Everyone who has used catgut for ligatures must have been impressed with the fact that as soon as the catgut gets wet with water or blood it becomes slippery, and the first knot does not hold well while the second is being tied. Especially true is this when working in dark corners where the view is obstructed by blood, as in the bottom of the pelvis following an abdominal section.

I now prepare catgut in the following manner: the coils of gut are first soaked in sulphuric ether for ten days, in order to render them aseptic. They are then put into a pint of pure alcohol in which has been dissolved an ounce of common rosin. By so doing I have found that the animal ligature, whether wet or dry, is sufficiently sticky to retain the first knot tied without slipping until the second is placed in position, and I know of no objection to the alcoholic solution of the rosin.

This may seem a trivial matter, but I doubt not all will agree that many of our aids in surgery are in themselves trivial, but they make just the difference between failure and success.

The objection might be raised that by this operation we produce an anteversion of the uterus, and, therefore, a pathological state. I believe the so-called anteversion of the uterus is the normal position of that organ when the bladder is empty, and that the various symptoms which have been ascribed to the so-called anteversions are due to disease of the structure of the uterus, or to displacement of all the pelvic contents downward, on account of injury to the pelvic floor, or to disease of the ovaries or bladder. For the last ten years, therefore, I have given up treating the so-called cases of anteversion as such, and have succeeded in giving relief in such cases by curing endometritis and subinvolution, and by repairing injuries from childbirth.

I am the more inclined to call the attention of the Association to

the operation of vaginal fixation, because I have seen very little regarding it in the medical literature of the country.

Duhrssen, of Berlin, who was one of the first to perform the operation, reports one hundred and forty cases without any fatal result, and with a permanent cure of 90 per cent. His method of operating varies slightly from the one described, inasmuch as he makes the incision in front of the cervix transversely of the vagina, instead of longitudinally. The operation described is essentially that of Mackenrodt, who is assistant to Prof. Martin, and it was Mackenrodt who read the first paper on the subject.

The operation is manifestly contraindicated where the uterus from any cause is large and heavy, or where adhesions prevent its being easily placed in a state of so-called anteversion, for any dragging upon the buried sutures would certainly cause them to cut out.

The operation is applicable equally to cases of retroversion or retroflexion.

ABDOMINAL SECTION IN ECTOPIC GESTATION WHERE THE FETUS IS LIVING AND VIABLE, WITH REPORT OF A SUCCESSFUL CASE.

By X. O. WERDER, M.D.,
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Ectopic gestation is still a fruitful and interesting topic for discussion, particularly that rare form in which the fetus has survived the dangerous catastrophe of primary tubal rupture and continues to develop to maturity. The question of the proper treatment of those cases of advanced ectopic pregnancy in which the fetus is living and viable is still in a somewhat unsettled state, and the cases encountered are so rare that the history of every such case forms an interesting contribution to the study of this uncommon condition, and also, especially if successful, assists in perfecting a proper technique in its operative treatment. For this reason I will ask your kind attention to the report of the following case: On January 23d I made the following entry in my case-book: Mrs. F. McC., referred to me by Dr. Wallace, of East Brady, Pa., aged thirty-five years, had one child, nine years old, since which time she remained sterile. Her puerperium was complicated by a slight febrile attack, lasting a few days only, after which her convalescence was normal. Health fairly good until three years ago, when she was under treatment for some uterine affection, of which she was relieved until August of last year. Menses regular, duration one week; moderate in quantity; accompanied by some pain, especially in her back; rarely cramps. Last regular menstrual period began July 16, 1893. In August they were delayed one week, and when they returned they lasted fully six weeks, but never profuse. During the first three or four weeks she was able to be on her feet, though she complained of some occasional pains, was sick at the stomach, and felt weak. In the latter part of September she was suddenly seized with very severe

cramps and a feeling of faintness, which returned in paroxysms for several weeks, confining her to bed for at least six weeks. In the early part of November she was able to leave her bed for short periods, but was unable to be about until Christmas. She is still very weak, anemic, and emaciated, and has pains in her abdomen, especially in her left side and in her back. Her menses have never reappeared since October; no leucorrhea; bowels obstinately constipated. Micturition frequent, sometimes accompanied with bearing-down pains. Appetite poor. Since Christmas she has noticed an enlargement of her abdomen, especially on her left side.

The lower part of her abdomen is enlarged by a tumor of the size of a five or six months' pregnancy, two-thirds of which occupies the left side and extends to a line midway between the symphysis pubis and umbilicus, which is tender on palpation. Distinct fetal movements can be felt, but the heart-sounds are inaudible. The breasts have become enlarged lately and present the characteristic appearances of pregnancy. The external genitalia show the peculiar discoloration of pregnancy to a slight degree. The cervix presents a bilateral laceration to the vaginal fornix; it is soft and patulous. To the left of the cervix pushing the uterus over against the right iliac bone is the tumor, reaching low down into the pelvis and filling out Douglas's space. The uterus in its lower two-thirds can be felt distinct from the tumor, and is enlarged, and when under the influence of an anesthetic the following day the upper third or fundus could be palpated, but the internal or left cornu and the border of the body seemed to merge into the tumor to such an extent that they were unrecognizable to the palpating finger. The examination without anesthesia was very painful, and she seemed unusually sensitive about her pelvis. The diagnosis made was ectopic gestation at six months, with a living fetus, which was subsequently confirmed by my friends, Drs. F. Blume, J. J. Buchanan, and John M. Duff. The patient was advised to remain at the hospital, where she could be under constant surveillance and receive prompt attention should occasion demand it. In spite of our earnest solicitations she went home, a distance of seventy-five miles, but was prevailed upon by Dr. Wallace to return a month later. An examination corroborated our former diagnosis and also noted a perceptible increase in the size of her abdomen. She had suffered less during the last month than previously, and her general health had

improved. She remained now at the Mercy Hospital for six weeks, going about the room and through the building on the same floor, and enjoying fairly good health, though she complained of a more or less constant soreness in her abdomen. It was decided to defer operation to about two weeks previous to the end of her term, unless some change in her condition should demand earlier interference.

After the usual preparations the operation was performed April 4th of this year at Mercy Hospital, in the presence of over twenty physicians. Having placed her upon the operating-table, another vaginal examination was made, when a finger could be introduced into the uterus up to the fundus without any difficulty, proving conclusively that the uterus was empty. The incision was made in the median line, and a yellowish-white cystic tumor exposed. As the placenta at the previous examinations had been located a little to the right of the median line, the sac, the walls of which were very thin, was opened cautiously by a small incision a little to the left of its centre, through which at once the child's scrotum prolapsed. The opening was rapidly enlarged with the fingers, the feet seized, and the child extracted. The head was in the left iliac fossa with the occiput and back pointing to the spinal column. Only a few drops of amniotic fluid escaped from the sac; the child had no other fetal covering except the cyst wall. The anterior surface of the cyst was perfectly free from adhesions, but above and on the left side of the sac numerous loops of intestine were found adherent; on the right it terminated between the folds of the broad ligaments at the uterus, which was enlarged to the size of a two-months' pregnancy. It was decided to extirpate the sac if at all possible, and separation of the intestinal adhesions was therefore begun, when all at once a frightful hemorrhage from the bottom of the sac, evidently the placenta, put a sudden stop to our efforts. While my assistant used sponge-pressure I rapidly clamped the ovarian artery in the infundibulo-pelvic ligament very close to the ilium, and with another forceps compressed the branches of the uterine artery along the left border of the uterus, which at once controlled the bleeding. The placenta, which was spread out over the spinal column and the right posterior wall of the pelvis and adherent to the intestines only by a small portion of its upper margin, could now be separated with comparatively little loss of blood. It was of rather larger size than an ordinary placenta, and devoid of any fetal membranes. Another effort was

now made to peel off the very thin cyst walls from the intestines, but the adhesions were firmer than the membranous sac wall, which tore at every such attempt, and was, therefore, abandoned. The free portion of the cyst was now excised, the ovarian and uterine arteries compressed by clamp-forceps, tied with strong silk ligatures, the forceps removed, and the remainder of the sac gathered and drawn together by silk sutures attached to the parietal peritoneum, the cavity packed with a Mikulicz dressing of iodoform gauze, and the abdominal incision closed as far as the gauze dressing permitted.

The child, which at first was considerably asphyxiated, soon responded to the efforts of resuscitation made by Dr. J. M. Duff, and seemed hearty, strong, and well developed, though sadly deformed. There was marked asymmetry of the head and face; it had club-feet, and on the left side of the thorax there was an ulcerated surface about an inch square, probably produced by the pressure of the left elbow against that side of the body. The first two days it seemed to be thriving; it took its nourishment, sterilized milk, readily, but on the third day it became very restless, its breathing was rapid, and the temperature 104°, in which condition it continued until it died, four days after birth. The cause of death was supposed to be pneumonia, but no autopsy was held.

The patient rallied well from the operation, and the convalescence progressed very favorably and smoothly, and she never gave rise to the slightest anxiety. She was discharged from the hospital perfectly well, excepting a small fistulous opening in her abdominal wound, and has remained in excellent health ever since, as a letter received from her a few weeks ago indicates, though she has never menstruated since last October.

Anatomically, the case was undoubtedly one of tubal pregnancy primarily, with rupture between the folds of the broad ligaments; but that it was not a purely intraligamentous pregnancy was shown by the fact that a part of the sac seemed to be formed of amnion only. There must, therefore, have been a secondary rupture during the course of pregnancy, at which the largest portion of the ovum became extruded into the abdominal cavity, while a part continued to develop within the broad ligaments. When this secondary rupture occurred is not clear from the history of the case, but I am inclined to the belief that it happened early during her gestation, as

there were no symptoms pointing to any such accident after the sixth month.

In looking over the literature of this subject I have been able to find sixteen successful cases of celiotomy for ectopic gestation, with living fetus at or near term, not counting my own, the operators being Jessup, A. Martin, John Williams, J. Lazarewitch, August Breisky, Hector Treub two cases, Joseph Eastman, R. Olshausen two cases, Carl Braun, von Fernwald, G. Rein, John W. Taylor, Prof. Schauta, Mordecai Price, and William T. Lusk. In Schauta's and Lusk's cases the operation was performed before viability of the child —namely, at the end of the sixth month, but as the technique is the same as at the end of term I have included them in my list. In eleven or, with my own, in twelve cases the placenta was removed at the time of operation with complete or partial enucleation of the sac —namely, by Martin, Lazarewitch, Breisky, Treub two cases, Eastman, Olshausen one case, Carl Braun, G. Rein, Schauta, and Lusk; in the others the sac and placenta were left and drained. The latter class of cases had, without exception, an unusually stormy and protracted convalescence, complicated by sepsis, venous thrombosis, etc., so that Lusk very properly remarks that "the fortunate results belong to the domain of miracle and do not invite to imitation," while the cases with removal of placenta, particularly those in which the whole sac could be enucleated, made uneventful and speedy recoveries.

The gravest element of danger in removing a living placenta is, as is well known, uncontrollable hemorrhage, which has induced many operators to postpone operation until after the death of the fetus, because after the placental circulation had ceased the risk from hemorrhage is comparatively slight. Though this method finds a few advocates even at the present time, the fear of sepsis in the ovisac, which so frequently follows the death of the fœtus, aided by a commendable desire to save the child's life, has undoubtedly been working a rapid change in favor of operative interference during the fetal life, especially as this has been justified by the more favorable results obtained in this operation during late years by an improved technique.

The blood supplying the placental circulation must, undoubtedly, be derived mainly from the ovarian artery and its anastomosing branches of the uterine artery. That these are the principal feeders was well shown in my case, in which compression of these arteries checked an alarming hemorrhage at once. Just as conclusive an ex-

ample of the correctness of this anatomical fact we have in a case reported by Sippel (*Centralblatt für Gynäkol.*, 1892, p. 992) in which he enucleated an ectopic sac at seven months with a living child with comparative ease, until it tore at the placental insertion, followed by a very profuse hemorrhage, which compression of the placenta did not affect, but which promptly ceased after ligation of the ovarian artery, unfortunately too late for the patient, who succumbed to the acute anemia one hour after operation. He strongly emphasizes the importance of securing the ovarian artery previous to the removal of the placenta. Olshausen and Breisky also call particular attention to this point in the technique of this operation, which has been followed by Lusk and Schauta. On account of the very extensive anastomosis of the internal ovarian with the uterine artery, it seems safer to me to ligate both vessels, as done in my case. If further experience bears out the correctness of this view in regard to the relation of these bloodvessels to the placental circulation, an important advance will have been made in the technique of this operation, and the cases in which at least the placenta cannot be removed will be very exceptional, limited to that class in which it has formed extensive intestinal adhesions. Considering the great danger of packing and draining usually practised in such cases, it would seem preferable to me to leave the placenta without drainage, sealing up the abdominal wound hermetically. That the placenta can become absorbed if undisturbed is demonstrated in those cases in which the fetus has died, and in which everything has disappeared except the fetal bones. Braithwaite (*Transactions of London Obstetrical Society*, vol. xxviii. p. 33) reports a case in which the placenta was left, and nothing escaped from the abdomen subsequently excepting a very small piece. Dr. Aust. Lawrence reports two cases before the British Medical Association, held at Bristol, 1894 (*Medical Record*, New York, September 1, 1894), in which he left the placenta; in one case it was absorbed, in the other the patient died from septicemia on the twenty-fourth day. He advises leaving the placenta, but reopening the abdomen if symptoms appear. Cullingwsorth at the same meeting narrated a similar case, with living child, in which the opening in the membranes was sutured and the cord cut short. There was satisfactory progress for three weeks; on the twenty-fourth day, however, a rigor occurred, and on the twenty-sixth he reopened the abdomen, and found purulent fluid in the re-

mains of the amniotic sac, which he washed out, but the patient died the same day. At the autopsy he discovered that there was no suppuration in the substance of the placenta, but the sepsis arose from the remains of the amniotic sac, which, being non-vascular tissue, was more likely to decompose. He advises, therefore, to leave the placenta, allowing it to bleed from the divided end of the cord, so as to lessen its size; to cut the cord quite close to the placenta, and to remove all the amnion possible, stripping it off from the placental surface, and to reopen the abdomen at once, should septic symptoms appear (*Medical Record*, New York, September 1, 1894). In addition to lessening the size of the placenta by allowing it to bleed from the severed cord, I would suggest to ligate the ovarian artery on that side, as by so doing its blood-supply would be greatly diminished, though sufficient circulation would remain from the adhesions to keep it alive. Considerable shrinkage of the placental tissues would, no doubt, follow this interference with its normal circulation, and absorption would take place more readily. The method of leaving the placenta and sac and draining it, causing them to slough out, is certainly such an unsatisfactory surgical procedure, fraught with the greatest risk to the patient, that it has little to recommend itself, and I feel confident will have no place in the future treatment of these cases.

The time of operation in advanced cases of ectopic gestation with a living child is still a matter of discussion. In my case I followed the advice of Tait (*Diseases of Women and Abdominal Surgery*, p. 516), who advises the careful watching and guarding of the mother; though I did not go so far as he, to wait until false labor sets in before operating. Werth and Olshausen (*Deutsche med. Wochenschrift*, 1890, p. 195), on the contrary, advocate operation regardless of the child's life from the fact that such children only very rarely live long after birth. The latter says: "On the mother's account it is wise to operate as soon as possible, because every delay is apt to become dangerous, and in the intra-ligamentous pregnancies the technical difficulties will only increase." While, no doubt, the welfare of the mother is first in importance, we owe some consideration to the life of the child, and I think we are justified in postponing the operation in the interest of the child, providing we do not jeopardize the chance of the mother thereby. We should, therefore, be largely guided by the condition of the mother; she

should be carefully watched and prepared for emergencies; but as long as no untoward symptoms require prompt interference the period of viability should be waited for. In a similar case, however, I would not postpone operation much beyond viability, but would perform celiotomy between the seventh and eighth month, in order to save the mother a long, anxious suspense, and because the child would be smaller, and, therefore, especially in the absence of amniotic fluid, less subject to compression and consequent deformity.

It is a matter of considerable interest to ascertain the fate of the ectopic children which were delivered alive. I have been able to obtain the record of forty such children. Eighteen of these died within a week after birth; five within a month; one died at six months of broncho-pneumonia; one at seven months of diarrhea; one at eight and one-half months from pneumonia; one at eleven months from croup; one at eighteen months from cholera infantum —making a total of twenty-six deaths, and leaving fourteen children to be accounted for. Of these, five were reported as living and well after operation, with no subsequent report; one was strong and healthy after three weeks, but no report since; one was well at six months, then lost sight of; one well at last report; two live and are well at one year; two living and well at two years; one (Beisone's case) well at seven years; and one (Tait's case) well at fourteen and a half years. In regard to the latter, Dr. R. P. Harris has kindly furnished me the following interesting information: the child is Marian S., who is in good health and has grown to be quite a comely girl, living near the Woman's Hospital in Birmingham. Her mother, Mary Ann S., was thirty-three years old at the time of operation. Pregnancy in the right broad ligament. She died on February 4, 1880. Operation January 31 (Tait), or Sunday, February 1, 1890.[1]

The greatest mortality of ectopic children occurs, therefore, during the first few days after delivery, almost 50 per cent.; of twenty-two surviving that period, eight are known to have died within the first year and a half; five cases were said to be strong and healthy

[1] Tait operated on but one ectopic case in which the child lived. The boy seen in Tait's house, and generally regarded as an ectopic child, is Hemlingford P., son of Elizabeth P., delivered by Cesarean section on October 11, 1881, a private case near Tait's house; woman died; boy believed now to be living; was seen last at Tait's in December, 1892. The confounding of these two cases lies at Tait's own door. This boy became ectopic, and the girl was not mentioned. (R. P. Harris in private communication.)

at birth, but no subsequent report. Five lived from six to eleven months; five from one to two years; two, seven and fourteen and a half years respectively.

While this table does not present a very hopeful prospect for the saving of ectopic children at a viable period, the fact that some of them have survived the most dangerous periods of childhood more than justifies us, in my opinion, to postpone operation until the viability of the child has been reached in all those cases where we can do so without danger to the mother.

The list appended contains all the successful cases of abdominal section for advanced ectopic gestation with living children which I was able to find in literature up to the present time, with such important data as may prove of interest in connection with the report of this case.

No.	Date of operation.	Name of operator.	Age	No. of pregnancies preceding.	Period of gestation.	Result to child.	Details of operation.	References.
1	Aug. 14, 1875	Mr. T. R. Jessup, Leeds, England.	26	One.	33d to 34th week.	Living, but died at eleven months from croup.	Placenta not removed; no sac; fetus free in abdominal cavity among intestines.	Tait on Diseases of Women and Abdominal Surgery, vol. i. p. 495.
2	July 9, 1881	Dr. A. Martin, Berlin.	39	Two.	7 months.	Alive, cord pulsating, but did not breathe; had a large encephalocele.	Placenta removed after ligation at three points.	Berlin. klin. Woch., Dec. 26, 1881. R. P. Harris, Extra-Uterine Pregnancy Amer. Journ. Med. Sci., Sept. 1888.
3	June 6, 1885	John Williams, London.	30	One.	35th wk.	Died in a few minutes.	Placenta not removed; sac drained.	Brit. Med. Journ., Dec. 3, 1887. R. P. Harris, ibid.
4	Nov. 4, 1885	J. Lazarewitch, Kharkof, Russia.	27	One.	9 months.	Lived twenty-six days.	Placenta and cyst drawn out, pressed up in the abdominal wound; ligated and large portion removed.	Vrach, St. Petersburg, 1886. R. P. Harris, ibid.
5	May 29, 1887	Hector Treub, Leyden.	34	One	2–3 weeks before end of term.	Living, weight over 4 pounds. A year later, a strong, healthy boy.	After incision of the sac, which bled freely, placenta was perforated with hand, and after extracting child bleeding was controlled by compressing each half of placenta by the hand of operator and assistant until removed; portion of sac extirpated, the rest intimately adherent to intestines, sewed to abdominal wound and packed with Mikulicz's dressing. Supposed to have been an ovarian pregnancy or a pregnancy in tubo-ovarian cyst.	Zeitschrift für Geburts. und Gynäk., 1888, Band xv. p. 384.
6	Oct. 29, 1887	Aug. Breisky, Vienna.	39	.....	End of 8th month.	Alive and well, weight 5 pounds, but died three weeks later from phlebitis of umbilical vein.	Tubal intra-ligamentous pregnancy. After removing child from the sac—the latter was drawn out, ligated at its juncture with the uterus, and removed—containing placenta and membranes—and cavity drained. Mother recovered perfectly in three weeks.	Wiener med. Woch., 1887, Nos. 48, 49, and 56; and J. Eastman, Amer. Journ. Obst., 1888, vol. xxi.
7	July 10, 1888	Joseph Eastman, Indianapolis.	39	One.	7 months.	Living, weight 4 pounds; died at age of 8 months and 13 days of pneumonia.	Intra-ligamentous tubal pregnancy. Clamped uterine end of tube and broad ligament, and enucleated fetal sac containing placenta intact, and quilted the pedicle with cobbler's stitch, using iron-dyed silk.	Amer. Journ. Obst., Sept. 1888, p. 929.

8	Nov. 1, 1888	B. Olshausen, Berlin.	30	One.	9 months.	Living, weight 5 pounds; when a year old weight 14 pounds.	Fetus free in abdominal cavity, also largest part of placenta between loops of intestine; the latter adherent to right broad ligament, with only about one-third of its periphery. This last portion was easily surrounded and proved so thin that two mass ligatures of silk were sufficient to tie off securely the placenta with attached portion of broad ligament. Only shreds of fetal membranes were attached to placenta.	Deut. med. Woch., 1890, p. 171.
9	Feb. 11, 1889	Carl Braun von Fernwald, Vienna.	...	Two.	End of term.	Living, weight over 6 pounds; died 72 hrs. after birth from lobular pneumonia, due to inspiration of amniotic fluid.	Child free in abdominal cavity, placenta adherent to posterior surface of uterus, and right broad ligament extends deep into Douglas's cul-de-sac, and firmly attached to descending colon. After ligating right broad ligament in number of places, placenta can be detached in a number of places without much hemorrhage; but removal of sac necessitated elastic ligature around uterus to check bleeding and supra-vaginal hysterectomy.	Archiv für Gynak., 1890, Heft 2.
10	Feb. 27, 1889	R. Olshausen, Berlin.	32	Four.	9 months.	Alive, but very much deformed. Died one hour and a half after birth.	Sac and placenta left undisturbed and drained with iodoform gauze packing. Spontaneous expulsion of placenta on thirty-fourth day. Interesting is the daily discharge of fluid per vagina during the eighth month, which was undoubtedly amniotic fluid draining away through tube. No amniotic fluid present during operation.	Deut. med Woch., 1890, p. 171.
11	Feb. 4, 1890	G. Rein, Kiew, Russia.	35	.....	37th week.	Living, weight 6 pounds; slight asymmetry of head. Two years after operation hearty and well.	Intra-ligamentous tubal pregnancy. Sac, placenta, and fetal membranes removed entire by enucleation from the peritoneum in the same manner as practised in removal of intra-ligamentous ovarian cyst.	Centralblatt für Gynäkol., 1892, No. 50.
12	1891	John W. Taylor, Birmingham, Eng.	...	.....	9 months.	Living.	Fetus free in abdominal cavity, placenta left behind and drainage-tube introduced; umbilical cord drawn out of the lower angle of the wound. Patient recovered after very protracted convalescence complicated by septic thrombosis of the left iliac, the inferior cava, the right iliac, and right renal veins.	Obst. Trans. London, 1891, p. 1151; and Wm. T. Lusk, in New York Journ. Gynecol. and Obst., July, 1893.
13	Jan. 10, 1801	Prof. Schauta, Vienna.	...	.....	7 months.	Living.	After tying ovarian artery at the peritoneal fold, which constituted the residue of the ligamentum infundibulo-pelvisum, he incised the peritoneal covering in a circular line corresponding nearly to the largest circumference of the sac. The enucleation of the latter was readily accomplished without rupture of sac walls. Considerable hemorrhage resulted from detachment of the ovum from the uterus, which was temporarily controlled by pressure and later by sutures. The peritoneal borders of the cavity were then sutured to the parietal peritoneum, and the cavity itself was drained by a Mikulicz's tampon.	Beitrage für Casuistik Prognose und Therap. der Extra-Uterine, Schwangerschaft, Prag, 1891; and Wm. T. Lusk in New York Journ. Gynecol. and Obst., July, 1893.

No.	Date of operation.	Name of operator.	Age	No. of pregnancies preceding.	Period of gestation.	Result to child.	Details of operation.	References.
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3	June 6, 1885	John Williams, London.	30	One.	35th wk.	Died in a few minutes.	Placenta not removed; sac drained.	Brit. Med. Journ., Dec. 3, 1887. R. P. Harris, ibid.
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12	1891	John W. Taylor, Birmingham, Eng.	...	.....	9 months.	Living.	Fetus free in abdominal cavity, placenta left behind and drainage-tube introduced; umbilical cord drawn out of the lower angle of the wound. Patient recovered after very protracted convalescence complicated by septic thrombosis of the left iliac, the inferior cava, the right iliac, and right renal veins.	Obst. Trans. London, 1891, p. 1151; and Wm. T. Lusk, in New York Journ. Gynecol. and Obst., July, 1893.
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No.	Date of operation.	Name of operator.	Age	No. of pregnancies preceding.	Period of gestation.	Result to child.	Remarks.	References.
14	Oct. 23, 1892	Dr. Mordecai Price, Philadelphia.	...	.....	.....	Living.	Placenta attached to uterine attachment of left tube and the entire pelvic viscera of the left side, from the spine at the back and extending up to the kidney and covering the descending colon. It was slightly wounded in the abdominal incision and the cause of considerable hemorrhage; this was controlled by clamping-forceps which were allowed to remain until first dressing. The child was enveloped only by amniotic sac to which were attached the transverse colon and also small intestine to a slight extent. Placenta left and sac packed with iodoform gauze. Last portion of placenta removed on thirty-fifth day.	Trans. State Med. Soc. of Penn., 1893, p. 152.
15	Aug. 10, 1893	Wm. T. Lusk, New York.	33	One.	6 months.	Lived 24 hours.	Pregnancy started in right tube and subsequently developed to a great extent between the folds of broad ligaments. Tied ovarian and uterine arteries of right side and then enucleated entire sac with placenta.	Wm. U. Lusk, Technique of Primary Cellotomy and Advanced Ectopic Gestation, N. Y. Journ. Gyn. and Obst., July, 1893.
16	1894	Hector Treub, Leyden.	...	.....	3 weeks before term.	Lived several weeks.	Fetus free in abdominal cavity. Supra-vaginal amputation of uterus; removal of placenta and sac. (Private communication from R. P. Harris.)	Bull. Mém. Soc. Obst. et Gynécol. de Paris, 1894.
17	April 4,	X. O. Werder, Pittsburg.	...	One.	2 weeks before term.	Lived 4 days.	Child enveloped in amniotic sac and also partly by folds of broad ligaments. Placenta removed after clamping, and subsequently tying ovarian and uterine arteries of left side. Part of sac excised, but portion had to be left on account of firm internal adhesions. Edges of sac and stump of left broad ligament drawn together by sutures and attached to parietal peritoneum and drained by Miculicz's gauze packing.	

SUPPLEMENTARY PAPER ON ABDOMINAL SECTION IN INTRAPELVIC HEMORRHAGE

By MARCUS ROSENWASSER, M.D.,
CLEVELAND.

The implied disapproval, and the fear lest it be a step backward, expressed by a number of the Fellows who kindly discussed my paper at our last meeting in Detroit, are my apology for again bringing this subject before you. I ventured an argument against the dogma "When you find an extra-uterine, early or late, remove it." I attempted to prove that *vigilant delay* under definite limitations was more safe than immediate operation, and was based on authority "more positive than the vaporings of fancy." Experience with a limited number of additional cases has served to strengthen my conviction that the position advocated is one in advance and not backward.

My plea for *vigilant delay at absolute rest in circumscribed hemorrhage* is based on the fact that there is no immediate danger, and that active surgical interference is proper only for definite indications, or when vigilance and rest are not practicable. At the time of my writing I was not aware of the demand for these indications made by Prof. R. H. Fitz in his annual oration before the Medical and Chirurgical Faculty of Maryland.[1] Permit me to quote: "It seems, therefore, not unprofitable to consider the subject of intraperitoneal hemorrhage from a general point of view, especially bearing in mind the experience of the past, with the hope that the indications for its medical treatment may be made conspicuous, and the existence of limitation for its surgical treatment be emphasized."

In the past fifteen months I have met with nine cases of intrapelvic hemorrhage. There is no stronger proof of the inefficient teaching of the past, and of the necessity of further missionary

[1] "Intra-peritoneal Hemorrhage." Maryland Medical Journal, June 17, 1893.

work on our part, than the fact that the diagnosis was not made in a single instance—barely suspected in two. Two[1] of the nine were due to free hemorrhage, and were operated without unnecessary delay. The accompanying table is limited to the seven cases of circumscribed hemorrhage, and is arranged to correspond with that published last year.

I did not see Case I. during the attack, which had taken place eighteen years before, but I found the encysted skeletal remnants while operating for ovarian cystoma. In Case II. the mass was absorbed in two months, and the patient has continued well since. After resting in bed three months, Case III. was allowed to leave the hospital, a mass of the size of an orange still remaining. She had attended to her household duties all summer, but recently there are more tumor and some pain. The necessity for operation may yet arise. I do not consider her well. Cases IV. and V. were in hospital ten weeks and three weeks respectively, before operation; the latter was not in my care. In Cases VI. and VII. there was no delay because the indication for interference was imperative when first seen. The last four cases, therefore, were operated for cause with or without delay. The causes were: Growth of tumor, two; recurrent hemorrhage, two. There were two deaths after operation. Case V., in which the writer assisted, died of shock. Case VII. was having active, recurrent bleeding for three days, with failing pulse, when first seen; she was operated at once, but died septic.

I have here described unvarnished facts that we, as specialists, cannot ignore. Our ideal is early recognition and early operation—before the loss of blood has proved fatal; before dangerous adhesions have formed; before sepsis has set in, and while the operation is comparatively simple and safe. But when the case has continued for some time unrecognized; when a tumor has formed and adhesions have become organized, the possibility of absorption is so great that it ought not be discarded. The operation, on the other hand, has become proportionately more difficult and dangerous, and ought not to be done except for cause. We are confronted by two factors, the average practitioner and the average operator. To the former the symptoms of intrapelvic hemorrhage must be made so plain that its early diagnosis will be as assured as that of any other common dis-

[1] Cleveland Medical Gazette, February and September, 1894.

ease. To the latter the indications for surgical interference must be so clear-cut that he can distinguish between cases that require immediate operation, and those that can bear *vigilant* delay with reasonable hope of ultimate recovery without operation.

In three of the cases reported it was impossible to remove the sac entire, on account of numerous dense intestinal adhesions. These constitute the chief element of danger. The attempt to enucleate the sac is often followed by serious lesions, or even death. I have elsewhere[1] advocated non-interference with such adhesions. It is better to incise the sac, evacuate the contents, stitch the edge of the incised sac to the parietal wall and drain. The question whether it would not be more safe to operate by vaginal incision when the tumor bulges into the vagina, and thus avoid interfering with the adhesions above, is still an open one. In a careful study of the literature and statistics,[2] I found the advantage in favor of abdominal section to be but a fraction of one per cent.

These additional cases serve to corroborate:

1. The ease of recognizing intrapelvic hemorrhage.
2. The feasibility of distinguishing between urgent cases requiring immediate operation and cases that can safely bear vigilant delay until their recovery or until some definite indication demands operative interference.
3. The danger attending the operation; and consequently
4. The propriety of crying "halt" to the furore for indiscriminate cutting for every blood-clot to be felt in the pelvis.

If I were to amend the conclusions arrived at in my former paper —namely: to operate in all cases of unruptured tubal pregnancy; in all cases of free hemorrhage; in circumscribed hemorrhage complicated by recurrence, or by suppuration, or growth of fetus, or interference of vital functions by pressure—I would add *non-absorption* as a possible final indication.

[1] "A Contribution to the Technique of Intra-ligamentary Operations." Annals of Gynecology, March, 1891.

[2] "Comparative Merits of Abdominal Section and Vaginal Incision in Extra-peritoneal Hematocele." Annals of Gynecology, September, 1889.

Cases of Circumscribed Pelvic Hemorrhage.

No.	Medical attendant.	Age	No. of children.	Last child.	Disease continued from—	Disturbance of menstruation.	Size of tumor.	Indication for operation.	Operation.	Duration of disease.	Result.	Elsewhere reported.	Remarks.
1	M. R.	42	Three	11 yrs.	Symptoms 18 yrs ago (1875); sick 3 or 4 mos., suppos'd at time to be peritonitis.	Had gone two weeks over time. Attack sudden with intense pain. Flow simulating abortion.	.....	None	.....	3 to 4 months.	Recovery	Amer. Journ. of Obst., vol. xxviii., No. 6	Operation for ovarian cyst June 6, 1893. Skeletal remnants of fetus found encysted in tube, with evidence of rupture eighteen years previous to present operation.
2	Dr. G. R. Fell, Cleveland, Ohio.	32	None one abort. at 8 weeks	.....	Dec. 15, 1893, to Feb. 17, 1894	Attack sudden—two weeks after menses were due. Rectal and vesical tenesmus.	Mature fetal head, in left pelvis.	None	.....	2 months	Recovery	....	Mass had disappeared when patient left city Recent correspondence had with Dr. Temple, of Toronto, proves there has been no return.
3	M. R., College Clinic.	22	One	3 yrs.	Jan. 4, 1894, to April 7, 1894	Attack during menses, which were very scant. "seemed to want to be unwell but could not."	Mature fetal head, in left pelvis.	None; possibly non-absorption	.....	3 months	Recovery imperfect, mass still in pelvis, may require operation	.....	Had been treated for four weeks for pelvic abscess before she came to clinic. Was in hospital from February 19th to April 7th.
4	M. R., City Hospital.	40	None	.....	Jan. 31, 1894, to June 30, 1894	Missed two periods. Attack sudden with intermittent hemorrhage.	Filling left side of pelvis within 3 inches of umbilicus.	Non-absorption and growth of tumor.	June 2	Previous to operation 4 months	Recovery	Cleveland Med. Gaz., Sept 1894	Seen first March 21st. Temporary diminution of tumor caused long delay before operation. A three months' fetus was found. Patient left hospital in five weeks.

5	Dr. C. B. Humiston, Cleveland, Ohio, operator. (Reported by permission).	36	Two	5 yrs.	About Mar. 8, 1894, to May 10, 1894	Menses, March 1, scant, and dragged for a week. Attack sudden with development of tumor.	Filling pelvis to level of anterior superior spinous process.	Growth of tumor.	May 10	2 months	Death	.....	In hospital three weeks before operation. Died of shock sixteen hours after operation. Fetus and placenta in sac.
6	Dr. S. M. Shryock, Hillyard, Pa.	27	Two	4 yrs.	About May 15, 1891, to July 9, 1894	Went two weeks over time. Attack sudden, followed one week later by continued hemorrhage and recurrent attacks of of pain.	Filling pelvis and extending near umbilicus.	Recurrent hemorrhage.	June 7	Previous to operation 7 weeks	Recovery	Cleveland Med. Gaz., Sept. 1894	Operation day after arrival in hospital. No fetus found, only sac and liquid blood and clots. Went home fifth week.
7	Drs. C. Gentsch and C. B. Humiston, Cleveland, Ohio.	29	Four	1 yr.	May 10, 1894, to July 5, 1894	Missed two and a half months, when suddenly attacked with intense pain. Repeated following month, followed by pelvic tumor.	Filling pelvis and reaching within 2 inches of umbilicus.	Recurrent hemorrhage.	July 3	Previous to operation 7 weeks	Death	Cleveland Med. Gaz., Sept. 1894	Operation on day of consultation with failing pulse and tendency to collapse. Death from sepsis on third day. Incomplete removal of the sac. Blighted embryo of three weeks found within ovum.

THE IMPORTANCE OF RECOGNIZING SEPTIC PUERPERAL ENDOMETRITIS EARLY, AND ITS TREATMENT.

By EDWARD J. ILL, M.D.,
NEWARK, N. J.

You will pardon me if I take up your time with a subject which is not new to you, but certainly of the greatest importance to us all. The importance of the subject becomes so much the greater when we see good men discourage local treatment[1] and treat this disease symptomatically as our forefathers in medicine did. My experience revolts at this backward step. The results in my hands have been too good.

No accident causes the physician more mental anxiety and shakes his reputation more than the occurrence of puerperal septicemia in his patients. How important this subject is to me will be apparent to you, when I say that I have been called upon as many as five times to see cases in question in a week for five anxious and unfortunate medical brethren. Ever since the observations of Semmelweis on the contagiousness and infectiousness of puerperal fever have been accepted as facts it has been the aim and object of the obstetrician to avail himself of every means which will reduce the number of cases in his practice. Every obstetrician should feel that in a very great majority of cases he is the cause when his patient gets sick with this disease. The sooner we recognize this the better for our wards and the better for the profession. Just as the surgeon knows that something has been overlooked in an operation when he gets septicemia, so the obstetrician should seek for the cause of his failure.

Please remember I have said that in the majority of cases the obstetrician is to blame. There are times, circumstances, and conditions

[1] Wilhelm Schrader: Volkman klinische Vorträge, No. 95. Arne. Folge.

when it becomes unavoidable, and, therefore, beware of calling a professional brother unclean!

Next to importance of the prevention of this disease is its early recognition. It is this and its early treatment that I am especially anxious to hear you discuss. It is disastrous to hide our fears under the disguise of malaria and treat with a handful of quinine pills, or, as is so common now, under the name of grippe. Let us immediately know what the symptoms mean and how to combat with it, as delay of twenty-four hours may settle the patient's fate and make her an utterly hopeless case. It is not my purpose to give you a lengthy discourse on the pathology of the disease; suffice it to say that presence of pyogenic bacteria in the genital tract is absolutely necessary for the production of the disease. I do not wish to go into any detail as to the symptoms of the disease under consideration, only allow me to recapitulate what at the bedside is sufficient for an immediate interference.

When a woman, on the second or third day, possibly the fourth day, after her labor, has a sudden chill, or even a rigor and a temperature of *over* 101°, may be 104°, with an anxious expression of the face and a rapid, full pulse; when her temperature before this chill was suspicious at 100°; when possibly her uterus at a bimanual examination is sensitive on pressure, but movable, and the broad ligaments are not the seat of tumors; when the cervical canal is wide open and there is a fetid and fishy odor to the finger as it is removed from the vagina; then I would take the necessary steps for such treatment as I will speak of below. Likewise I should say that a suppression or rather a retention of lochial discharge needs a similar attention. To assure ourselves of the diagnosis it will be well to eliminate by careful examination a pneumonitis or symptoms referring to it. A lymphangitis of the breasts, due to fissured nipples, must be equally carefully eliminated. An acute indigestion or a rectum loaded with fecal matter will often produce a passing rise of temperature, but not a chill, and a saline cathartic with a diaphoretic, say, ipecac, will clear up the case. With equal care we must endeavor to eliminate old inflammatory masses on either side of the uterus in the broad ligaments. We may have an old imprisoned abscess, or pus tube, which has produced new inflammatory and septic symptoms, and needs quite a different treatment from what this paper will speak of.

If we still feel uncertain and allow several hours to pass after the initiatory symptoms, and find the temperature no lower, not having given an antipyretic to misguide us, we may safely go on with what seems to me the proper and, when carefully carried out, a safe treatment. During the last ten months I have seen about fifty cases of septic endometritis, one-half of which were at term, with but one death. This case should hardly be considered, since the patient was in a semicomatose condition from ptomaine-poisoning, and had a temperature of 104° to 105° for a week. She died in twenty-four hours after I saw her. I do not know of any cases that need our attention so much and so constantly.

If we regard that the disease is produced by pyogenic germs, we will also agree that the fewer there are in the uterus and vagina the more likely will the patient be able to withstand their onslaught. We will further agree that the healthier the tissue the less chance will the germs have to enter the circulation. The tissue in the uterus will remain healthy in proportion to the shortness of time in which the germs are allowed to remain in the uterus and the possibility of preventing their growth. This being the case, it must be our endeavor to use those means which experience and science have taught us will destroy or prevent germ-growth early, and to use those means before they have penetrated into the deeper layers. We may not, and do not, always succeed. It is easier to prevent infection than to cure it, and a good deal depends upon the resistance of the patient.

If the diagnosis is once established that a cavity—let it be the nasal cavity, the ear, the pleura, or the peritoneum—is filled with putrid matter, then I think few would deny the propriety of removing this and keeping the cavity clean. Why not the uterus?

If the cleansing is done early and thoroughly, there is no need of discussion but what the tissues will be less diseased and more ready to withstand the onslaught of the few septic germs remaining.

What failures I have had were all due to late interference. The use of a handful of quinine pills or the dosing with antipyretics, aconite, alcohol, etc., is not going to cleanse the uterus of a mass of filth.

There may be difference of opinion how such a uterus can or should be kept clean. One's experience is one's best guide. In my own experience the best and safest way to perform the operation

is as follows: the patient should be placed under an anesthetic, if she be at all sensitive, for the first operation. She is then put on a table with a Kelly perineum pad or an ordinary rubber cloth under the hips to run the water into a bucket. The buttock is drawn well over the lower edge of the table and the thighs flexed on the abdomen. All the outer parts, as well as the vagina, are thoroughly cleansed with soap and hot water and rinsed with a solution of mercuric bichloride of 1:5000.

A perineal retractor having been introduced, the anterior lip of the cervix is caught up with a tenaculum-forceps and drawn downward and forward. This has the effect of straightening the canal, and not infrequently a gush of ammoniacal grayish-red fluid will be seen to escape from the os. From the moment the speculum is introduced a stream of the bichloride solution is constantly kept flowing over the parts, vulva, vagina, and cervix. If the uterus is open, as it usually is, a long glass tube bent three inches from the extremity, or a large-sized Fritch-Bozeman catheter is introduced, and the cavity of the uterus irrigated with the same solution, the eye closely observing the outflow of the fluid. As soon as the fluid returns clear, a broad curette or the Reinstetter rinse-curette is thoroughly but carefully applied to the whole endometrium, to remove all old clots of blood and flakes of membrane. If the case is of short duration, there will not be a great flow of bood, but a case of several days' standing will often bleed profusely. At times shreds of membrane which the curette misses are easily removed by a broad-bladed forceps. I would warn against the use of the ordinary narrow uterine dressing-forceps as being entirely too pointed, and, therefore, dangerous.

Unless a Reinstetter curette is used a constant current of the solution is kept pouring over the cervix and vagina. When we are satisfied that all has been removed, the uterus is again thoroughly irrigated with the above solution. When I can get sterilized water I prefer it for intra-uterine irrigation. The bloody water is now carefully wiped from the vagina, and the uterine cavity *loosely* filled with a long narrow strip of iodoform gauze. This strip should be sufficiently long not only to fill the uterus but the vagina also.

After the uterus has been filled the vagina is dusted over with iodoform, carefully covering all wounds of this organ, and the vagina also packed with the gauze. This dressing insures complete drainage,

unless the cervical canal and uterine cavity have been packed as one would do for hemorrhage.

After twenty-four hours, or if the fever has completely subsided in forty-eight hours, the dressing is removed. A complete subsidence of the fever is not unusual.

If the fever rises above 101.5°, irrigations of sterilized water are used every four hours, and once in a day the above bichloride solution. As soon as the temperature is below the above mark nothing is done. When circumstances are such that the patient cannot be reached so often, I advise the injection of fifteen grammes of a five per centum mixture of iodoform and glycerin, and preferably in sterilized glycerin, high up into the cavity of the uterus. Thus I have been obliged to treat patients from one to twenty-seven days. All vaginal and cervical wounds, especially when covered with diphtheric patches, I always treat by covering them with iodoform or the iodoform and glycerin mixture. I would also warn against cauterization with the chloride of iron for sloughing or diphtheric wounds in the vagina. This procedure I can recommend to your kind consideration as a very valuable one, and one that I have often successfully applied.

There are some who are sarcastic enough to say they have seen patients get well in spite of such treatment. To such I should say, and I know of them personally, that at their hands I wonder any sort of surgical case gets well. We hear from others that they have known of severe cases get well without such so-called heroic measures.

To these I can only say that the same thing can be said of most therapeutic measures, as we have no means by which to make controlling-experiments.

It is certainly not with the desire of doing something that I would let the patient undergo such treatment. To say that there are no dangers nor accidents to be guarded against would be misrepresenting facts. And I would be the last man to recommend this method to a rude or careless hand.

I like to avoid an antiseptic intra-uterine irrigation when I can safely do so. I am especially opposed to carbolic acid, as I have several times, and twice in the same patient, seen carbolic acid solution produce violent convulsions and complete insensibility lasting for an hour or more.

The glass tube or Reinstetter curette must be thoroughly emptied of air before its introduction into the uterine cavity. The hemorrhage in early cases is rarely severe, and ceases when all foreign matter has been removed. It always indicates a partial removal of an adherent piece of membrane, placenta, or blood-clot. When, however, the hemorrhage occurs during an operation, which is done several days after the onset of the fever, and continues after thorough curetting, it is much more dangerous, and means a certain amount of fatty degeneration of the walls of the uterus and poor uterine contractions. The prognosis of these cases is bad. An incident which is alarming is a chill almost as soon as the patient is put to bed. This is unquestionably due to a sudden large absorption of septic matter either through the veins or lymphatics. This was formerly looked upon by myself as a very serious matter, as it meant septic matter in the general circulation. It is nearly always followed or accompanied by a sudden rise of temperature. Fortunately, as I soon discovered, there was a corresponding lowering of temperature. I believe it is this incident which has frightened some operators into standing by and "letting nature take its course," treating symptoms as they come up. Among these symptoms which they most forcibly combat is the high temperature, and they combat it with what I take to be the curse in medicine of late years, *i. e.*, the antipyretics.

It simply means covering up symptoms. This always reminds one of the ostrich, which hides its head in the sand so as not to be seen by its enemy.

The surgeon recognizes the fever as the enemy, and lowers the temperature (if he succeeds) instead of removing the cause. The fever does not kill, it is the septic infection that kills.

A most important point in the operation is to see by ocular inspection that the flow of water during irrigation from the uterus is complete.

An accident which may occur in late years, and which I have seen three times, twice after abortion and once at full term, is perforation of the corpus by the curette. These accidents happened in my own hands and in the hands of my assistants. In one case I gave warning to my surroundings of the friable condition of the uterus, and soon found my curette in the abdominal cavity. It is, therefore, well

to apply the instruments with the greatest caution to the fundus, and use the broad curette only. The ordinary uterine curette is entirely too narrow.

Fortunately, all these patients got well. Since this experience I have endeavored to avoid the accident by keeping one hand over the fundus to steady the uterus, thus guarding against pushing the curette through the uterus and too great mobility of that organ.

A NEW AXIS-TRACTION AND ANTI-CRANIOTOMY FORCEPS.

By WILLIAM B. DEWEES, M.D.,
SALINA, KANSAS.

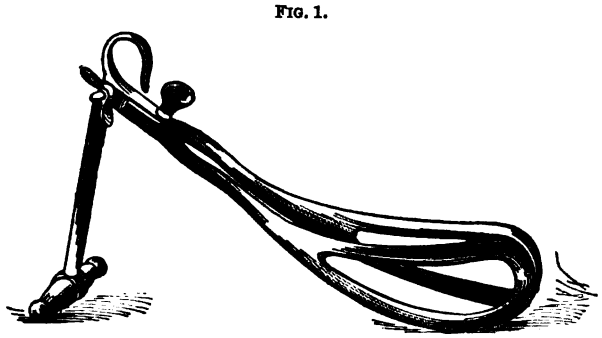
THE advantages claimed for the use of this instrument are:

1. That axis-traction is made perfect, easy, and simple.

2. That axis-traction at the superior strait is perfect and continues so, following the curve of Carus from the brim to the outlet.

3. That the axis of the blades is constantly parallel with the axis of the parturient canal as the head descends. Thus the accoucheur is enabled to fulfil a most important aim in forceps operations, namely, to deliver with the minimum amount of force.

FIG. 1.



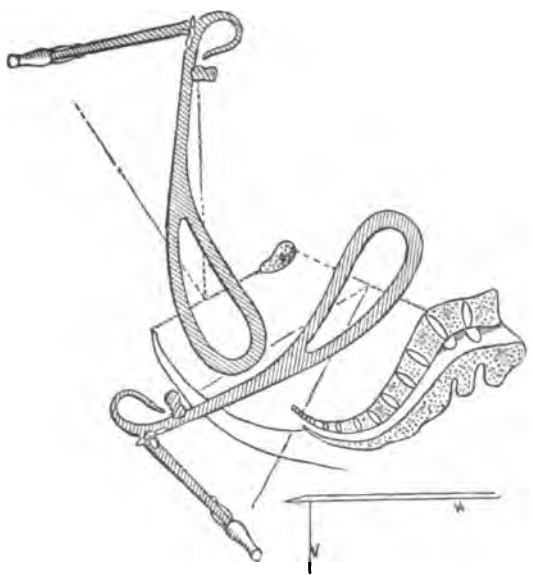
The Axis-traction and Anti-craniotomy Forceps (side view). Dimensions: Length, 11 inches; length from lock to tip of blades, 9 inches; length of perineal curve, 5 inches; length of handle, 4 inches; greatest width between blades when closed, 2¾ inches; width between tips of blades when closed, ¼ inches; weight, 16 ounces.

4. That the operator is enabled to seize the head more advantageously at the brim, and the facility with which it can be aided to descend in the axis of the superior strait, as well as to follow the axis of the pelvis, would seem scarcely possible to one accustomed only to the ordinary forceps.

5. That by means of the set-screw, with its scales, the blades can be definitely fixed upon the child's head during the period of uterine contraction and as readily released during the interims, thus intelligently simulating nature and allowing free internal rotation of the head, while the danger of slipping—which is almost always due in the use of the ordinary forceps to a tiring of the muscles of the hand of the operator—is reduced to the minimum.

6. That it is easy of application, and in its dual character it is a conservative life-saving instrument to both mother and child. It is an effectual tractor and compressor. The blades are sufficiently

FIG. 2.



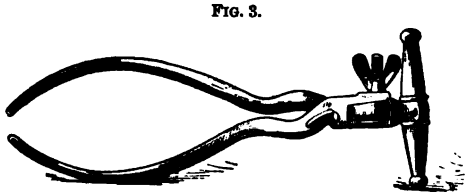
Illustrating axis-traction with the forceps.

strong to prevent slipping and readily secure moderate transient compression of the flexible infantile cranium in its upper portion without pressing too strongly at its base with the tips. Thus, it is a safe and efficient substitute for delivery by craniotomy or version in cases of even considerable pelvic contraction. It has all the advantages of ideal axis-traction and anti-craniotomy, as well as of the long and the short forceps, with ample power and perfect control, and with even more simplicity than the ordinary forceps,

while it saves the expense of three or more instruments where one will serve the purpose.

7. That it is an aseptic, economic, safe, efficient, and uncomplicated instrument, occupying a position between the ordinary forceps and the cephalotribe or cranioclast, with the greatest possible safety to both mother and child. The forceps has an undoubted place as a compressor in certain cases, and if properly used there is no harm. Statistics prove (Winter, in *American System of Obstetrics*) that the ordinary forceps has caused less than 15 per cent. mortality in contracted pelves. It remains to be shown how much less the mortality will be by the use of this ideal instrument, which is constructed upon a sound scientific theory and definite mathematical drawings based upon accurate measurements of the average female pelvis. The conclusion is warranted that when it becomes impossible to deliver a living child with the use of this forceps

FIG. 3.



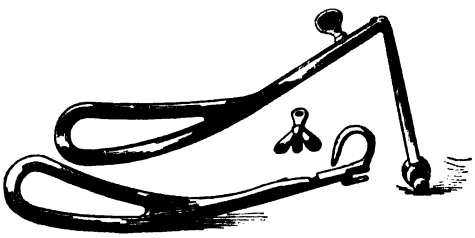
The same forceps, reduced scale (upper view).

there is no other operative alternative but Cesarean section. The fact remains that obstetrics as an art, and the technique of Cesarean section as an operation, have advanced to such a stage of perfection that the revolting operation of craniotomy on the living fetus is never justifiable.

A careful, timely study and practical test of the axis-traction principle in obstetric practice will bring the conviction that it is rational and correct. Much attention has been given of late years by the leading obstetric authorities throughout the world to the designing of an ideal instrument for its proper production; but partial or total failure has come in all instances. This is evidently due to the fact that these endeavors were chiefly based upon such fallacious ideas as, first, that correct axis-traction can only be obtained by having rods attached to the blades by movable joints, and, second, that traction, whether with pulleys, tapes, or rods, must in no wise be connected with the handles.

The fact is, that these ideas are not only erroneous, but actually detrimental to the production of proper axis-traction, which can be made correctly and effectually without any such complicated and cumbersome attachments to the ordinary forceps. This has been recognized by high authority for many years, among whom may be cited Aveling, Merales, Hubert, Robert and Fancourt Barnes, Allen H. Smith, Barton Cooke Hirst, and others.

FIG. 4.



The same forceps, reduced scale, showing all the parts separated.

Timely observation and experience established the fact that the desideratum to fulfil the rationale of the axis-traction principle was still wanting. The writer, endeavoring to supply the same, presented the consummation of his first idea to the Section on Obstetrics and Diseases of Women of the American Medical Association at Detroit, Michigan, June 7, 1892. But a riper experience and more extended study have eventually brought about the idealization of what has proven to be a more perfect instrument for the purpose desired than any that has yet been brought to the notice of the profession. This instrument was made for me by the A. E. Yarnell Co., Philadelphia, Pa.

FIBRO-MYOMA OF THE BROAD LIGAMENTS: A REPORT OF TWO CASES.

By E. ARNOLD PRAEGER, M.D.,
LOS ANGELES.

When I reflect on the worldwide reputation enjoyed by a goodly number of the Fellows of this Association and on the very great literary and professional value of the papers which are published annually under the head of *Transactions*, a humble worker like myself must feel the danger of affording another example of the truth of the old proverb that "Fools rush in where angels fear to tread," in venturing out of obscurity and presenting a contribution before so august a body of leaders of that great and important branch of surgery known as gynecology.

On consulting a large number of standard works on gynecology I am struck by the dearth of information with reference to tumors of the broad ligaments other than cysts.

From the only reference to this subject which I have come across, with the exception of a statement that such conditions are possible, I gather that Klobs[1] considered it doubtful whether fibroids could be developed in the broad ligaments, and he regarded the recorded instances as cases where fibromata of the uterine wall developed toward the ligamenta lata. Kiwisch has devoted much attention to the subject, and he believes fibromata in this situation to be very rare and of but small size. He always found that the tumor arose from the lateral portions of the uterus, and had gradually, in the process of growth, become detached from that organ, save perhaps for only a thin pedicle. Virchow also is doubtful as to their primary occurrence, and appears to have seen only small specimens. Kiwisch has observed them as large as two fists.

It does, *a priori*, appear probable that since the same smooth

[1] Cyclopedia of Obstetrics and Gynecology.

muscular fibres and connective tissue are found in the broad ligaments as exist in the uterus, myomata and fibromata and sarcomata could occur in the one as in the other. In the last few years a number of large tumors have been removed from the broad ligaments. Thus was one by Schmid, in Breisky's clinic; one by Mikulicz, and one by v. Buschmann, in Billroth's clinic, and others.

In 1882 Sänger collected eleven such cases, and proved the primary origin from the broad ligaments of a case upon which he operated himself.

Having searched in vain for any recent literature on this subject, I am led to the conclusion that the primary occurrence of such tumors unconnected with the uterus must be of sufficient rarity to warrant me in placing on record two such cases, which have occurred in my practice.

The first was that of a lady, Mrs. H., aged forty-five years, who was first seen by me four years ago, when I was called hurriedly in the middle of the night to see her in consultation, owing to the fact that she had had a very violent flooding, and when I obtained the following history: she had been married twenty years and had never been pregnant. Eleven years previously she commenced to suffer from excessive floodings and consulted an eminent London gynecologist, who informed her that she had a fibroid tumor, and who made periodical examinations and applications *per vaginam*. Two years previously, on her leaving England, he counseled her on no account to permit any operative interference, but to bear the ills she had, assuring her that on the occurrence of the menopause matters would right themselves and she would cease to have any trouble, and impressed upon her that it was far better to put up with the severe hemorrhage than to undergo what he called "heroic treatment."

When I saw her she was almost collapsed from a terrible hemorrhage.

The patient was a large, flabby woman with a very fat abdominal wall, and had marked mitral disease.

The following morning she was removed to my private hospital, where, on examination under ether, I found the cervix widely dilated and a large submucous sessile fibroid the size of two fists presenting. This I enucleated. The patient made a good recovery, with the exception of the state of her heart, and was in good health up till a little more than a year ago, when I was again asked to see her.

She then complained of great abdominal pain, and said that she had noticed for some months past an increase in the size of her abdomen. On examination under ether, the uterus was found movable, somewhat low, and rather pushed over to the left. To the right was felt a large, rather boggy tumor, which was movable. As locomotion was almost impossible, and the pain and discomfort great, the patient readily gave consent to operation.

She was accordingly readmitted to my private hospital, where, under ether I opened the abdomen in the middle line. A large tumor, entirely separate and distinct from the uterus, except that part of its base rested on the fundus uteri and helped to depress and push it over to the left, was found in the right broad ligament. It had a pedicle about the size of two thumbs' girth and three and one-half inches in length. This was included in the Staffordshire knot, and the tumor, which weighed nearly ten pounds, removed.

With exception of the after-effects of the ether, which was borne badly, there was no cause for anxiety. The temperature never went above normal, and the patient made an uninterrupted recovery, and is now in a better state of health than she has been for years.

I am indebted to my friend Dr. R. E. McKechnie, who kindly made a microscopic examination of the tumor, for the following report: "The tumor proves to be a fibro-myoma, the myomatous elements largely in excess. There are no true cysts, but numerous dilated lymph-spaces filled with a gelatinoid material."

The second case was that of Mrs. G. W., aged thirty-six years, first seen by me four years ago last April, and from whom I obtained the following history:

Twice married, first at the age of sixteen. Has never been pregnant. Had never had gonorrhœa. Had suffered from repeated attacks of "ovaritis."

On examination I found distended tubes and enormously enlarged ovaries, and, as the patient was bedridden, had no hesitation in recommending their removal. She was sent to my hospital, where, under ether, I removed the ovaries and tubes; adhesions were numerous, so a glass tube packed with iodoform gauze was inserted, but removed in a few hours, as the state of the gauze in the tube showed drainage to be unnecessary.

The patient made a good recovery without causing me any anxiety, and continued in good health until the beginning of January of the

present year, when she noticed that menstruation, which had ceased after the removal of the ovaries and tubes, had recommenced and was somewhat free, and she complained of pelvic pain, which she referred to the left iliac region.

On examination under ether I discovered, in spite of a very fat abdominal wall, a firm mass the size of a fist in the left broad ligament.

By February this growth had doubled in size, and the patient was anxious that something should be done. She was readmitted, and on February 22d, the patient being under the influence of ether, I opened the abdomen half an inch to the left of the scar of the former operation. There were numerous adhesions of omentum to the abdominal wall, which I broke down and found a tumor of the size previously mentioned in the left ligament, quite unconnected with the uterus, which was, if anything, smaller than normal. In spite of the fact that the tumor was very adherent, I succeeded in enucleating it without hemorrhage. A question arose in my mind as to whether I should drain or not. I, therefore, packed with gauze for a few minutes, when, finding there was no oozing, I determined to close the abdomen without drainage. Although I am not sure that I should incur a similar risk on another occasion, I had no need to regret it on this, as the patient made a good and quick recovery, the temperature never going above normal.

I am again indebted to Dr. R. E. McKechnie for his microscopic examination of a section of the tumor and his report, which was to the effect that it was a fibro-myoma, inasmuch as there were a few myomatous cells scattered through, but that the fibrous tissue was largely in excess.

In my opinion, it is in just such cases as this that the surgeon finds difficulty in deciding the all-important question "To drain or not to drain." In "dirty" cases, or those in which there are numerous adhesions, there can hardly be any doubt as to the necessity of answering in the affirmative, but in such cases as I have just related I am by no means sure, although the end justified the means, that I adopted the most prudent surgical course.

Although, perhaps, it is hardly within the scope of the present paper, I desire to express the opinion that far more important than the length of incision (personally I incline to one as short as is possible to work in) and the mode of uniting the abdominal wound,

whether by interrupted suture through the whole thickness of the wall, or the continuous suture, layer by layer, is the proper preparation of the patient before operation and the management of the case for the first few hours after operation.

In other than urgent cases I always keep the patient absolutely in bed not less than three days, longer if possible; during which time the bowels are thoroughly cleaned out and the diet is liquid and restricted in quantity. As soon as the patient is recovering from the effects of the ether, which is the time when thirst appears most unbearable, she is given, whenever she demands drink, an occasional teaspoonful of hot water almost saturated with magnesium sulphate. The patient having been well purged previously, this soon acts, and, as a rule, within four or five hours after operation, I have the satisfaction of hearing that the patient has either passed flatus *per rectum* or had a slight motion. When she more fully recovers from the ether and can be made to understand why drink is withheld, I find that an occasional injection of hot water *per rectum* fulfils two purposes, *i. e.*, keeps up peristalsis and overcomes, to a certain extent, the feeling of excessive thirst.

Since I have adopted this as a routine measure, I have been surprised at the rarity of the occurrence of ether-vomiting and complaints of the distressing flatulence that formerly were so common.

So slight is the distress that it is rarely I see one of my patients with the knees drawn up. For the prevention of hernia (in my opinion), keeping the patient in bed for at least one month after operation and the enforcement of the rule that the patient shall for six months or a year wear a well-fitting abdominal belt, is of far greater importance than any question as to the mode of introducing sutures.

SURGERY ON THE WING—THREE SUCCESSFUL ABDOMINAL SECTIONS.

By J. W. LONG, M.D.,
RICHMOND.

I OFFER you a short paper under the above title, not because I think *three* cases of abdominal section are sufficient to claim your attention, or because abdominal surgery can be done *better* "on the wing" than in a well-appointed hospital, but because these three cases aptly illustrate the three *most common conditions* for which abdominal surgeons are called to operate, and to show that a keen appreciation of aseptic surgery will enable a man to do good work anywhere and under any circumstances. As I write this sentence the vision of Ephraim McDowell mounting his horse and riding from Lexington, Ky., to near the Hermitage, Tennessee, and with the aid of old Andrew Jackson removing an ovarian cyst rises in my mind. I wish I could say, like McDowell, that I feel the delectation of a fifteen-hundred dollar fee in my pocket, but alas! "Do I decry hospitals?" Never a time—I am a stickler for them; but must we let men and women die because, forsooth, they are not in a hospital?

I have been spending a short time at the old home-place, in Randleman, N. C., and while there did among other operations the following sections:

CASE I. *Appendicitis.*—Frank H., married, aged thirty-five years, had suffered with "cramps and colic in his bowels" at intervals for three or four years. On Friday he had quite a severe attack. Saturday and Sunday he was better. Tuesday he cut wheat all day. That night he was seized with an intense pain in the right iliac region, "drawing him double." His attendant, Dr. W. A. Fox, promptly diagnosticated appendicitis. I reached home the following Thurs-

day; the next day I was asked to see the case. I confirmed the diagnosis and urged *immediate operation.* My instruments had not yet arrived from Richmond. But the man needed an operation, and, like the man in Texas who needed the pistol, he needed it *bad.* Dr. Fox and his associate, Dr. J. O. Walker, put their armamentarii together, and, placing the patient on a dining-table, rapidly anesthetized him. Cutting carefully down I came upon the appendix, *distended to the bursting point;* the pus could be seen through its thinned walls. A cough, a sneeze, suddenly turning over in bed, might have burst the sac and in a moment precipitated that man into a hopeless condition. The appendix was curled up behind and external to the cecum. Adhesions to the cecum were dense; those to the anterior abdominal wall were more friable. With considerable difficulty the sac was enucleated. It was then ligated, cut off, the mucosa tied separately, and the serosa brought together by Lembert sutures; thus virtually turning the stump into the cecum. The abdomen was thoroughly irrigated, about half of the incision closed with interrupted sutures, and a Mikulicz drain used. The recovery was uninterrupted.

This case is a fair sample of the *vast multitude* of appendicitis cases which are occurring daily, and yet men—good men, too—shut their eyes and say "I don't have cases of appendicitis." I do not believe *every* case (nor even half the cases) of appendicitis should be operated upon; yet, while holding this conservative view, I have numerous operative cases, and they all get well when I operate prior to the advent of general suppurative septic peritonitis.

CASE II. *Ovarian tumor.*—Mrs. C. H., aged about thirty-five years, two children, youngest ten months old. Noticed tumor three or four months after birth of her last child. It grew rapidly, and when seen by me her abdomen was the size of a seven months' pregnancy. Diagnosis, multilocular cyst. Ovariotomy was done at the patient's home in Randleman. I was assisted by Drs. Woollen, Fox, and Walker, and Mr. T. C. Walker, a member of our graduating-class. The operation possessed nothing unusual, except that I had failed to take my ovarian trocar with me, and rather than puncture the cyst with a scalpel I made a long incision, notwithstanding the assertion by competent authority that it is better to puncture with a scalpel than to make a long incision. The recovery was perfect.

It may be said that ovariotomy is so simple that any tyro can do

it; but what sane man is so rash as to assert that any but a master hand should do it?

CASE III. *Endometritis, chronic interstitial salpingitis, retroflexion.*—Mrs. J. B., aged twenty-six years; two children, two and a half and five years old; no abortions; has not been well since the first child was born, for three years she has been in bed most of the time, and for three months all the time. Her case has been variously diagnosticated and treated. Examination discovered the endometritis, the fundus retroflexed, the tubes thickened, and the ovaries enlarged and prolapsed. The retroflexion could be overcome bimanually, but there were evidently tubal and ovarian *adhesions* which would prevent the retention of the fundus in its normal position by non-operative measures. Here was a *condition*, rather than a disease, which justified and indicated an operation, a poor man's wife is bedridden; she suffers not intensely but continuously; she not only ceases to be a helper as wife and mother, but is a burden to her family; the lesions present are without exception *progressive;* the sepsis inaugurated at her first labor and augmented at her second will continue to exert its injurious consequences until, if not already so, tubes and ovaries are totally destroyed functionally, and largely so organically, and inseparable adhesions will bind the fundus in an abnormal position. An operation would remove the diseased tubes and ovaries and put the uterus into a position favorable for drainage; besides these reasons, the patient lives far away in the country, and could not go to a hospital, rather must continue at home in bed; again, I was there with my "gun loaded" (which I confess is certainly a poor reason of itself). Operation was done at once, with no assistance save the attending physician, Dr. C. H. Lewis (who gave the ether), the husband, and two neighbor women. The tubes and ovaries were removed and the *posterior* surface of the fundus attached to the *anterior* abdominal wall. The recovery was uneventful except a small stitchhole abscess, which did not retard convalescence.

This class of cases is a very numerous one in my experience, and nothing relieves them like curettage, removal of the tubes and ovaries, and suspension of the fundus. The curettage was omitted in this case because of a lack of assistance and because I could see the patient only the one time.

PELVIC DISEASE AND ITS RELATIONSHIP TO INSANITY IN WOMEN.

By JOHN YOUNG BROWN, Jr., M.D.,
LAKELAND.

The alienist as well as the general practitioner recognizes the influence of the sexual functions as a factor in the production of psychical disturbance in woman. Even within the limits of health the influence of this function is clearly seen. The various perversions of the senses during pregnancy, the functional neuroses of menstruation, and the psychical disturbances of the menopause and puberty, are clearly illustrative.

While all agree that many neuroses, psychical depressions, and reflex nervous symptoms can with perfect safety be charged to functional and pathological disturbances of these organs, it is exceedingly questionable whether pelvic disease *per se* ever results in actual insanity. The question of operative interference in this ill-defined class of so-called "reflex insanity" is one which has been freely discussed both by the surgeons and alienists of this country and Europe.

After a careful review of the literature of the subject, and an analysis of the cases operated on and the results obtained, I think I am safe in saying that the consensus of opinion is decidedly against operative interference when the neurosis is the only indication for operation, and I must confess that my own experience in cases of this character has developed nothing to lead me to a different conclusion.

Greig Smith, in discussing the question of operation in cases of insanity, says: "The proposal of Goodell to remove the ovaries from all female lunatics who have abnormal sexual propensities cannot be regarded seriously, any more than we should regard castration under similar circumstances in the male. Certain cases of mania, in which the attacks come on solely or chiefly at the periods,

and in which the sexual element strongly predominates, might be properly treated by the removal of the appendages. In puerperal mania, particularly if the disease has recurred after a second confinement, the removal of a portion of the tubes to prevent future pregnancy, rather than complete removal of the appendages, is indicated."

In this day of conservatism, with the knowledge we have of the symptoms and pathology of pelvic disease, the indications for operation in a given case are to be based on the local diseased condition of the organs and the symptoms resulting therefrom, and not on any supposed reflex symptoms. I hold that no surgeon has a right to remove the uterine appendages from a female lunatic unless there is present a pathological condition which would warrant an operation in mental health.

There is equally as great a proportion of insane women who suffer from pelvic disease as there is among a like number of sane females, and I see no reason why this unfortunate class, when their condition demands it, should not be entitled to the same relief afforded by operative interference as their sane sisters; and I am glad to say that the profession is rapidly coming to an appreciation of the necessity for such work among the insane. Dr. George H. Rohé, of the Maryland Hospital, Dr. Manton, and Dr. Alice Bennett have all done excellent work of this character in the institutions over which they so ably preside.

The time has come when work of this kind can no longer be neglected in our own asylums, and for asylum superintendents and asylum physicians to say that the indications for both major and minor gynecological surgery are not present in their insane patients, just as they are present among the sane inmates of other hospitals, is to admit that they neglect to look for them, or fail to recognize them; and in this they put themselves in the same category with the country doctor, who says "that he has delivered thousands of women and never had a lacerated perineum."

From my own observation at the Central Kentucky Asylum my opinion is that examination will show that fully 25 per cent. of the female population in our State institutions suffer from some form of pelvic disease. This being the case, it is just as scientific to urge that we neglect or allow to run their course our cases of pneumonia, bronchitis, and other medical diseases, as it is to allow these equally important surgical troubles to go without treatment; and while I

admit that conservatism should be our guide in all operations of this character, it is better to err on the operative than on the non-operative side of the question.

In the work I have done at Central Asylum I have been fortunate in having the hearty support of our Superintendent, Dr. H. K. Pusey, and the Board of Commissioners of the institution, five of which board are prominent surgeons and members of this society. In all the cases here reported the indication for operation has been the disease and not the symptoms, except Case IV.—one of nymphomania, which I shall describe at length. Case III., while it cannot be classed as a pelvic disease, is of interest, and I have included it in this report.

Strict asepsis has been aimed at in each operation. The patients were all given a week's preparation, which consisted of a careful regulation of diet and two warm baths daily, the abdomen being carefully scrubbed at each bathing with soap and brush. The intestinal canal was thoroughly washed out with salines prior to operation. All instruments and dressings used were carefully sterilized by heat. Silk was used for the pedicle and silkworm-gut for closing the abdominal wound. Irrigation and drainage were used in only one case.

CASE I.—Josephine H., aged thirty-four years, single, was admitted to Central Asylum January 8, 1886. Diagnosis, chronic delusional insanity. History of case from date of admission to December 10, 1891, is without interest. On December 10, 1891, she was suddenly seized with an attack of catalepsy, in which condition she has remained almost constantly since. On January 15, 1894, in the presence of the staff, an anesthetic was administered, which resulted in complete muscular relaxation as she came under its influence; as soon as the anesthetic was withdrawn the muscular rigidity gradually returned. She was a chronic sufferer from profuse and uncontrollable metrorrhagia, and as she was growing daily weaker from the constant loss of blood, removal of the appendages was decided upon. On the 8th day of May, 1894, I removed both ovaries and tubes; ovaries were found to be of the chronic cystic type. Patient went on the table in a cataleptic condition, and although ether was administered there was at no time complete muscular relaxation, the abdominal muscles remaining partially rigid during the entire operation. Patient made an uninterrupted recovery, and has had no hemorrhage since the operation. She is improving in general condi-

tion, but is still in a profound cataleptic state. I shall shortly report this very interesting and unusual case in detail.

CASE II.—Henrietta K., German, aged forty-two years, single, was admitted to the asylum September 20, 1880. Diagnosis, chronic delusional insanity. The records of her case show that she has for years suffered from metrorrhagia, and within the last two years has been constantly flooding. On examination I found the uterus enormously enlarged, and through the abdominal walls the nodular fibroid growth could be distinctly felt. Supravaginal hysterectomy was decided upon. On May 18th, assisted by the house staff, Dr. J. W. Guest, Dr. C. Goodshaw, of Louisville, the latter being her family physician, and Dr. Arch. Dixon, of Henderson, I opened the abdomen and removed the enlarged uterus and appendages. There was a cyst of the left ovary as large as a hen's egg. There were no marked adhesions, and the various steps of the operation were accomplished without difficulty. In stripping the bladder from the uterus to adjust the nœud I was so unfortunate as to tear the viscus to the extent of half an inch. This was carefully sutured with silk. The abdominal cavity was copiously irrigated with hot sterilized water until the water came away clear. A glass drainage-tube was placed in Douglas's pouch and the abdominal wound closed. On account of the bladder-wound a soft catheter was inserted and tied so as to retain it in the bladder. The patient was put to bed with a pulse of 96. She reacted nicely, there being comparatively no shock. The drainage-tube was removed in forty-eight hours. She has suffered no pain and required no narcotic. Her pulse has never been above 96, and she has had no rise of temperature. The stump has come away, and I think I can safely say that she is practically well, this being the twentieth day after operation.

CASE III.—Mary S., aged thirty-six years, admitted to the asylum July 9, 1891. History of the case from date of admission to date of operation is without interest. On February 12th she was seized with violent vomiting, and complained of severe colicky pains in the abdomen. On examination of the abdomen I discovered a tumor, freely movable, somewhat larger than a large orange, situated just under the umbilicus. The case was afterward seen by Drs. H. H. Grant, Wathen, Satterwhite, Dugan, and Dixon. They all advised exploratory incision. On March 10th I opened the abdomen and removed the growth, which proved to be quite a good-sized cyst of

the mesentery. Patient made an uninterrupted recovery, and is now in excellent physical health.

CASE IV.—Clara M., single, aged twenty-six years, was admitted to Central Asylum May 4, 1891. She was a woman of unusual intelligence and well educated. At the age of sixteen she began to masturbate and show marked erotic symptoms. In spite of careful watching by her family she would solicit intercourse, and twice became pregnant. She contracted syphilis, and as a last resort was sent to the asylum. On admission her condition was pitiable; she was pale, anemic, and had frequent attacks of hystero-epilepsy. She masturbated incessantly. The case was of such a desperate and loathsome character that I suggested the removal of her appendages, as an experiment, thinking perhaps that it might benefit her. On the 8th day of August, 1893, I operated, removing both ovaries and tubes; tubes and ovaries were normal. She recovered rapidly from the operation, but instead of being benefited by it I candidly believe it aggravated her condition. She continued to practise masturbation until her death, which occurred January 7, 1894, from pneumonia, six months after operation.

ECTOPIC GESTATION.

By HERMAN E. HAYD, M.D.,
BUFFALO.

To abdominal surgery is due the credit of having placed this peculiar manifestation of nature's aberrant function within the possibility of surgical relief; and so great have these surgical triumphs been that thousands of young and useful lives have been saved by timely operative interference. To Lawson Tait must be given the credit for having had the courage and surgical skill to cut down upon a ruptured tubal sac, clamp and tie the gaping bleeding vessel, and thus establish the scientific and surgical treatment of extra-uterine pregnancy.

For many years this accident was looked upon as extremely rare; but owing to increased skill in diagnosis, and early resort to abdominal section in grave and suspicious pathological conditions, its frequency becomes appalling. In sixty thousand women examined in the course of seven years in Carl Braun and Späeth's clinic in Vienna, but five cases of extra-uterine pregnancy were diagnosticated. Yet Joseph Price has operated upon ninety-three cases; Tait, no doubt, upon as many; Mann upon ten cases; and others upon varying numbers. I might tabulate a long list after the name of nearly every prominent operator where a diagnosis was made, often previous to operation, and the sac with its enclosed embryo successfully removed.

The causes of extra-uterine pregnancy are difficult to explain; but by studying the physiology of animal life and development we can form an approximative knowledge of this anomaly.

In mammalia, after intercourse, the spermatozoa are found upon the surface of the ovary, which goes very far to prove that fecundation takes place either upon the ovary or in the Fallopian tube. The spermatozoon possesses within itself inherent vibratory powers which enable it to travel a considerable distance, while the mucous mem-

brane of the tube, lined as it is with ciliated epithelium, assists in this progression. Moreover, like other visceral organs, the tubes possess a peculiar vermicular or peristaltic action, which has been seen in the animal to take place from the uterus outward in the direction of the ovary. Whether it is necessary for the Graafian follicles always to rupture before the male cell comes in contact with the ovule is still a debated question. However, in all probability the rupture does take place, and the union of the two germs is effected most frequently in the outer extremity of the Fallopian tube. Naturally, during this ovular excitation, a reflex act is accomplished which brings the fimbriæ of the tube in contact with the matured and rupturing ovisac, and thus the egg is carried into the tube. That fecundation does take place sometimes within the ovarian structure itself there can be no question, as authentic and recognized specimens of true ovarian fetation exist. The Graafian follicle ruptures, but for some reason the ovule is not expelled, and into the ovisac with its contained ovule is deposited the spermatazoon. It is believed by some that union at this point takes place very frequently; but instead of the ovum progressively developing within the follicular sac, the united cell passes into the tube or drops into the peritoneal cavity, and is there digested. If from previous inflammation there exist adhesions, or the peritoneum is roughened, so that the fecundated cell may get an attachment in the abdominal cavity, it may continue to grow and produce a true abdominal pregnancy.

In a normal pregnancy, with healthy uterus and adnexæ, the segmented cell is propelled into the uterine cavity and there forms its placental attachment; but if the tubes be diseased, so that they have lost their ciliated lining, or here and there denudation of the epithelium has taken place, a tubal pregnancy may result. Moreover, all distortions of the tubes, adhesions, internal constrictions, either from depositions of lymph within the tube-substance, or mechanical obstructions the result of pressure from organized bands, or swellings external to the tube, offer similar impediments.

The recognized forms of extra-uterine fetation are classified according to the position the ovum occupies. Thus we have tubal or tubo-ovarian, interstitial or tubo-uterine, cornual, true ovarian, and abdominal. Moreover, all these varieties excepting the last or true primary abdominal, which already has its seat within the peritoneal cavity proper, may become by rupture secondary abdominal or intra-

peritoneal, or, by rupturing into the folds of the broad ligament, extra-peritoneal.

However, the ovum is most frequently found within the tube, and there develops until the tenth or fourteenth week, when rupture takes place; and usually through the upper and free surface of the tube into the abdominal cavity, but occasionally into the folds of the broad ligament. The ovum may continue to grow in its new location, and form a placental attachment—usually marginal, but not necessarily —and reach a more or less perfect maturity. But this termination is very rare, because the hemorrhage and shock are so great when rupture takes place intraperitoneally that death of the mother speedily results. But if this does not occur, the ovum and the extravasated blood may become digested and absorbed by the peritoneum, or suppuration may occur, and death result from the absorption of septic matter; or the ovum may by transplantation grow to full term and then die or be removed by operation. If the rupture takes place within the folds of the broad ligament, the extravasated mass may and often does entirely disappear by absorption; or the fetus may reach considerable development and die and be discharged in pieces through the bladder, vagina, or rectum; or it may go on to a perfect development and be removed by operation alive and viable; or remain indefinitely, and perhaps be transformed into adipocere or a mere fatty matter; or result in a true lithopedion, in which calcareous degeneration takes place to a more or less maked degree, either of a portion or of the entire fetus.

The diagnosis and symptomatology of extra-uterine pregnancy depend largely upon the time the case comes under observation, and whether seen before rupture of the tube has taken place, or at the time of rupture, or after rupture. The diagnosis before rupture could and would, no doubt, frequently be made if the symptoms which the patient complained of suggested to her the advisability of a vaginal examination. But, unfortunately, so little special concern is associated with her early pregnancy that the surgeon's opinion is not sought until grave, alarming, or even fatal symptoms have occurred. There may be present the usual signs and symptoms of pregnancy; or instead of suppressed or absent menstruation the periods may have come with regularity, or frequent and irregular discharges of blood may have occurred. Nausea and vomiting are complained of. The breasts become swollen and tender and knotty, and may contain

milk; in fact, any and all of the symptoms of early pregnancy may exist, and, therefore, the woman naturally have no concern about her condition. On the other hand, any of these symptoms may be absent, and her complaints so indefinite that possible pregnancy is not thought of, and particularly so when the extra-uterine pregnancy occurs after years of sterility. Pain in the side is, however, frequently complained of. It may be dull and sickening, or even severe and paroxysmal in character, and accompanied with irregular discharges of blood, which sometimes contain shreds of decidual tissue which line the uterine cavity. The usual color-signs may be seen in the vagina and about the meatus. If a vaginal examination be made, the uterus will be found to be enlarged, and perhaps pushed over to the side by a small, tense, but painful mass, occupying the site of the tube. To differentiate this from a small inflammatory nodule, or small hematocele, or cystic collection in the tube is, of course, extremely difficult; but when present with the signs of pregnancy must be looked upon as very suspicious, and particularly when examined from time to time and found to be progressively increasing in size and dimensions.

However, this indefinite picture with its irregular and many-sided array of symptoms can without a moment's notice end in immediate death by sudden rupture of the fetal sac. Of course, the urgency and severity of the symptoms at the time of rupture depend upon the size and position of the rent and the amount of hemorrhage occasioned by it. If the bleeding takes place into the peritoneal cavity the symptoms are very alarming. The patient is suddenly seized with acute and agonizing pain, and there are present the evidences of shock. The surface is cold, pale, and clammy; the pulse is small, rapid, and thready, and the respirations hurried and sighing. Syncope sets in, then collapse and death.

This picture cannot be accounted for alone upon the mere loss of blood, because the hemorrhage may not be active and yet the degree of shock be very great. If the rupture takes place through the lower surface of the tube into the folds of the broad ligament, the shock is not so marked, nor is the necessity for active interference so imperative, because the amount of hemorrhage is limited by the hemostatic or compressing effect of the walls of the broad ligament. Again, the bleeding may be partly intraperitoneal and partly extraperitoneal from the position of the rent in the tube. If the opening be small,

a slight hemorrhage will take place, which may recur from time to time with symptoms of more or less shock and increasing general anemia. If the hemorrhage continue for some time, the abdomen becomes distended, not only from the presence of a great amount of fluid within its cavity, but by distention of the bowels.

If confined to the broad ligament, we find a globular, more or less fluctuating, immovable mass. This mass may remain for some time and finally be absorbed; or it may suddenly rupture and become intra-peritoneal; or it may break down and form pus with the usual septic phenomena; or this circumscribed abscess may break suddenly through the peritoneum; or externally through the vagina, rectum, bladder, or abdominal wall. The pain and distress continue as development progresses, owing to more or less peritonitis setting in, while the pressure-symptoms upon the bladder and rectum become very distressing. All the later signs of normal pregnancy may be seen if the sac does not rupture, which is true in only a small minority of the cases. The fetal heart is heard and the placental bruit. Quickening is felt, and the form and the extremities of the fetus can be mapped out to the side of a large and globular, and perhaps free body, which is the enlarged uterus. Finally spurious labor sets in, and after some hours of fruitless attempts and tumultuous uterine contractions the fetus dies and is disposed of by gradual absorption, suppuration, and expulsion through any of the hollow viscera, or it remains as a litho-pedion indefinitely. A lochial discharge, or perhaps discharge of blood, may occur for some days from the uterus, as in ordinary labor.

The differential diagnosis of extra-uterine pregnancy and its pathological anatomy I shall not try to consider in this paper, but rather proceed to a discussion of the various methods of treatment recognized for this condition, with a report of a case successfully operated upon by myself, after rupture of the sac had taken place, three weeks before the woman came under my observation for treatment.

The treatment of ectopic gestation naturally divides itself into surgical or operative interference and non-operative; the latter being considered applicable only previous to the third month of gestation and before rupture of the sac has occurred.

Among the non-surgical means which the profession recognizes as rational, scientific, and safe is electricity, whether in the form of galvanism or faradization, although the latter is to be preferred.

That electricity is capable of destroying the life of the early fetus there can be no question; and that gradual absorption of the liquor amnii takes place, and subsequently the fetal products, there can be no doubt. But, thanks to abdominal surgery, with its wonderfully improved technique, cutting through the abdominal wall and removing a terribly dangerous condition which menaces the life and happiness and safety of the individual so long as it exists within her, is so simple and yet so brilliant, that most men of operative experience prefer to operate just as soon as a diagnosis can be made. Electricity, however, is a destructive agent, and when applied by means of a vaginal electrode upon the most dependent part in the vagina, and the other pole over the lower abdomen, and the current turned on as strong as can be borne, with reasonable certainty death of the fetus will take place, and in the course of time nature will absorb the elements of conception. These experiences and observations have occurred so frequently in the practice of honest, capable, and courageous men, and skilful operators as well, that we must accept these conclusions as facts. Therefore, the treatment commends itself to us, first, because it is fairly certain and safe in its results; second, it can be employed by one not skilful enough to do an abdominal section; third, an operation can be subsequently performed if the electricity fails to check the development of the mass.

The difficulties in connection with the early diagnosis of extra-uterine pregnancy are very great, and as the vast majority of cases come under observation only after rupture of the sac has taken place, conservative measures are not often applicable. Moreover, the diagnosis is very frequently made only by delivering a suspicious mass by operation, when what was thought to have been a pyosalpinx, or an ovarian abscess, or a dermoid cyst, is found to be an unrecognized ectopic gestation. The converse is equally true. An operation is performed for supposed extra-uterine pregnancy, and an entirely different pathological condition is found to exist. Therefore, bearing in mind the frequency of ruptured tubal gestation and the difficulties associated with the diagnosis of unruptured sacs without confrontation, the surgical treatment must always be the only true and safe course to pursue. Werth maintains, and justly, that ectopic gestation should always be treated as a malignant growth by early removal, since hemorrhage, with all of its impending dangers, con-

fronts us in the early months, while peritonitis and septicemia meet us in the later periods.

When extra-uterine pregnancy exists after the fifth month it may be terminated at once by an abdominal section; or the ovum can be killed, and after a variable period be removed *en masse*. The object of this wait is the hope that the placental attachment may be loosened, and consequently its delivery without dangerous hemorrhage be facilitated. But the question of the length of time which is required to effect this desirable end is so indefinite, and the dangers of peritonitis and septicemia so great, most authorities believe that immediate and complete operation is the only true surgery. The nearer we approach the termination of pregnancy the greater will be the probability of extracting a living child. Therefore an elective operation is to be preferred, say, between the eighth and ninth months, but before false labor sets in, and if possible the placenta must be delivered at once. However, the delivery of the placenta cannot always with safety be attempted, and therefore it is believed to be good practice to extract the child only, and gradually as the placenta becomes loosened tear it away, having, however, previously closed the peritoneal cavity by stitching the peritoneum to the fetal sac.

If labor has commenced, it is well to wait some weeks, or even longer, if no dangerous symptoms set in before advising operation, as the child is killed by the labor, and the placenta is delivered with ease when its attachments have undergone the degenerative changes consequent upon time. But if septic symptoms make their appearance, operation is imperatively called for at once. A lithopedion or fetal remnant must be removed, and treated upon general surgical principles as one would treat other abdominal growths. Bones and fetal structures presenting on the surface of the abdomen, or through the rectum, or into other cavities, and communicating by sinuses, must also be dealt with upon general surgical principles.

I append herewith the report of a case successfully operated upon by me after rupture had taken place:

On October 23,1893, I was called to see, in consultation with Dr. Gilray, Mrs. L., aged twenty-eight years; married twice; no children. Menses first appeared when fourteen. No pain and always regular. Second marriage occurred fifteen months ago, and four years after the death of the first husband, whom she lived with two years without bearing him any children. Three months after

this second marriage she had an attack of inflammation, which lasted two months. She was in bed three weeks. After this illness she was quite well until three weeks ago, when Dr. Gilray was called to see her. While combing her hair one morning before a looking-glass she felt something give way, and so great was the pain and the shock she fell upon the floor. For some weeks previously to this attack she had irregular discharges of blood from the vagina, and was also nauseated; yet there was no suspicion on her part of pregnancy, since she had been so many years sterile.

I found upon examination a tender mass filling the left side of the pelvis and cul-de-sac. The right tube was thickened, but evidently from old trouble. The uterus was somewhat movable antero-posteriorly. The history pointed so strongly to a ruptured tubal pregnancy, together with the fact that there now existed in the pelvis a large mass which could not be disposed of by any means short of surgery, an operation was recommended at once. The patient acquiesced, and I took her to the Woman's Hospital, and after two days' preparation opened the abdomen. A mass the size of one's closed fist was removed, and upon dissection was found to be the tube and ovary. The tube had ruptured on its under surface, and it was surrounded by a mass of firm coagulated blood, stratified, and in the centre of which was the amniotic sac, unbroken, and containing a seven weeks' fetus with placenta and cord attachment. The right tube and ovary were loosened from their adhesions and removed. The tube was very much thickened, its fimbria closed, and the ovary was dense, firm, and enlarged. The peritoneal cavity was thoroughly irrigated, and a drainage-tube was inserted. There was free drainage for six hours, and at the end of sixteen hours the tube was removed. The patient made an uneventful recovery, and left the hospital on the sixteenth day, and is at present a perfectly well woman. Has no pelvic pains, and her sexual desire and marital relations are unimpaired.

The history of the case is clear and classical, but nevertheless important, as it again tells of the terrible uncertainty of ectopic gestation.

First. No suspicion of pregnancy.

Second. A long period of sterility.

Third. A sudden rupture of the sac, and fortunately a small rent on the inner and under side of the tube, and therefore no great

hemorrhage occurred, as the opening became occluded by a firm coagulum about it.

Fourth. Operation before another fatal hemorrhage took place, and the removal of the dangerous mass as well as a diseased tube, which sooner or later would have caused trouble. The right tube and ovary, as I said, were firmly adherent, and the tube much hypertrophied and diseased.

Fifth. There was no free blood in the peritoneal cavity, so the first hemorrhage was no doubt slight, yet sufficient to have caused sudden and great shock, and even collapse.

A CASE OF INSANITY, CAUSED BY DISEASED OVARIES, CURED BY THEIR REMOVAL— A PHENOMENAL TRIUMPH FOR OPERATIVE TREATMENT.

By JOSEPH MEYER, M.D.,
HONEY GROVE, TEXAS.

E. W., aged nineteen years, a tall, slender schoolgirl, well advanced in the literary department, talented in art and music, menstruated first time at the age of fourteen, then five and six months' intervals of non-appearance ensued. Pain and consequent weakness have characterized each period for the last twelve months. Ten months ago was prostrated by fright from an angry cow upon the college campus; suppression occurred at this time, then a return for four consecutive months, followed by four regular returns, and now (December 14, 1893, date of operation, used as a matter of convenience in reciting the history) there has been no return for two months. Constipation, coated tongue, pulse 84 to 104, temperature normal, insomnia, hyperesthesia, dilated pupils, emaciated, prostrate, demented. (Family history is negative as to heredity, except one case of insanity in the person of a maternal aunt, beginning at about the same age, from irregular menstruation, and still existing after a lapse of forty years of confirmed lunacy.)

Although our patient had been under the care of an experienced and competent medical attendant for the six months preceding the date given (December 14, 1893), under the advice and treatment of other skilful physicians from time to time prior to this, and at no time from under the personal and watchful care of an intelligent and loving mother, still her diffidence and modesty were such that no physical examination had been made until I was called to see her, and urged it as a matter of necessity and of vital importance. The history of the case clearly indicated and examination demonstrated

the *fons et origo mali* to be ovarian disease. It furthermore led to the discovery of a fecal impaction, which received prompt attention. After preliminary treatment for a few days the diseased appendages were removed (December 14, 1893) through a short abdominal incision. Both ovaries were cystic; one as large as a walnut, the other (not quite so large) burst under careful manipulation in removal.

For nineteen days preceding operation her dementia was aggressive. She was so very weak and prostrate that *exhaustion* was feared and seemed inevitable. Her nervous system was so impressible that the church and school bells in the village were not rung for two months, and every sound of machinery or other disturbing noise that it was possible to hush or muffle was stilled out of respect for the delicate sufferer.

For seven days after operation doubt was entertained as to the future of her mental condition. Before doing the operation I plainly stated the case to the parents, explained the pathology, reviewed the history, reminded them of the futility of remedies, the danger of delay, and held out to them a confident expectation of restoring physical strength, a *hope* for mental restoration also. After one week all doubt was dissipated. Recovery was slow; otherwise uneventful.

To Dr. M. A. Taylor I make grateful acknowledgment for counsel, assistance, and patient vigils, and with him share the honor of cure as cheerfully as I assumed the risk of defeat.

It is now nine months since operation, and she is not only in full possession of her physical and mental powers, an ornament and honor to her home, but also a beautiful monument to operative art. I submit the case without further comment as an evidence of the *possibility* of pelvic surgery, and aptly *illustrative* and *demonstrative* of the title of this report.

IN MEMORIAM.

ARTHUR WELLESLEY EDIS, M.D. London., F.R.C.P.

By FRANKLIN TOWNSEND, Jr., M.D.,
ALBANY.

Some time ago the *British Medical Journal* appeared with the following appreciative notice of the death of Arthur W. Edis, giving as well a short summary of his life and work:

"Dr. Edis was born in Huntingdonshire in 1840, of an old yeoman family, and after a preliminary education in the grammar schools of Huntingdon and Aldenham, he pursued a course of instruction in agriculture and in veterinary medicine at the Cirencester College, winning honors in veterinary surgery. Thence he passed on to Westminster Hospital. He took the membership of the Royal College of Surgeons of England in 1862, and became a member of the Royal College of Physicians in 1867, and M.D. of the London University in 1868. He spent some time in the schools of Vienna, Berlin, and Paris, acquiring a knowledge not only of the medical teaching of the schools, but also of the languages of the country.

"He was in Sedan immediately after the battle, and did good service in the ambulance work. In company with his brother, Colonel Edis, the eminent architect, he entered Paris during the last week of the Commune, where he took a great interest in the ambulance work. He was elected a Fellow of the Royal College of Physicians in 1879. Before finally settling to work as a specialist in diseases of women, he had applied himself to the study of insanity, and was resident medical superintendent at Tielhurst, where the connection between uterine disease and mental disease closely attracted his attention. For five years he was assistant

physician to the Hospital for Women, Soho Square, subsequently taking the post of assistant obstetric physician to the Middlesex Hospital; and eventually succeeded Dr. Hall Davis as physician and lecturer on diseases of women."

At the time of his demise Dr. Edis occupied the enviable position of Senior Physician to the Chelsea Hospital for Women, and held also other public offices of importance and trust. He was past President of the British Gynecological Society, corresponding Fellow of many foreign and well-known obstetrical and gynecological societies, as well as enjoying the distinction of being one of the Honorary Fellows of this Association.

Among his writings and contributions to medical literature we imagine him best known by his *Manual of Diseases of Women* and *Sterility in Women*, the former work having a wide circulation as a text-book in the best of our medical institutions.

He took a great interest in the question of providing seats for shop women, and published a pamphlet, *Seats for Shop Women*, which had a great influence in calling public attention to the dangers to health due to the prolonged hours during which young women were required to remain standing in shops.

Dr. Edis married a sister of the late Dr. John Murray, for many years the much-beloved and still unforgotten sub-editor of the *British Medical Journal*. The interest which he thus learned to take in the affairs of the *Journal* and the Association was never lost.

The death, and so early, too, of such a man as Dr. Edis cannot but be universally felt with deepest regret, and more especially so among those who enjoyed the honor and privilege of his personal friendship; to them, indeed, it will be a source of most profound pain. It can be timely said of him that he ranks as one of the few that have passed through an active professional career in that "Great Metropolis" without a blemish in his splendid character, clean and unsullied in its tenderness, the embodiment of purity.

The author of these few lines speaks from his heart in memory of his friend, and can sincerely congratulate himself in having once enjoyed the company and constant fellowship of so charming a man. During a sojourn in London a few years ago, he met him at a meeting of the London Obstetrical Society, and from this time until he left for his home he enjoyed his constant companionship; and in this manner a firm friendship was cemented in a surprisingly

short period, but one sufficiently long to permit an insight to his character as well as to create an enduring love for him.

Few there must be who were insensible to his almost feminine softness of heart expressed in the delicacy of his mien and sweetness of manner; added to these characteristics could be suggested his unchangeable kindness and tenderness of thought, his "whole-soulness," if we may borrow such an expressive term, for all; and, possibly, much of the success in his prosperous life was due to these characteristics, even more than to arduous study and carefully garnered clinical experience. To this work among God's noblemen we say *requiescat in pace*. Your name and fame shall last while memory endures.

HAMPTON EUGENE HILL, M.D.,

SACO.

By A. VANDER VEER, M.D.,
ALBANY.

After a busier and more useful life than falls to the common lot of mankind, Dr. Hampton Eugene Hill, of Saco, Me., one of our honored members, and a man beloved by all, joined the great majority January 9, 1894, in the forty-fourth year of his life.

Dr. Hill was born in Mt. Vernon, Me., April 21, 1850, the oldest child of a family of three children, and removed, with his parents, to Biddeford, Me., when ten years of age.

He attended the public schools of that city, was a graduate of the High School, class of 1865, and one of the youngest in the school's history, being but fifteen years of age. He then attended the Portland Medical School, taking one course in medicine at Bowdoin College, Brunswick, Me.

From boyhood, Dr. Hill seemed born for the profession he afterward took up. While entering upon the study of medicine with more than ordinary zeal, he was most enthusiastic over surgery.

His medical education was completed with a full course at Ann Arbor University, and a six weeks' term at the Long Island College Hospital, he now having arrived at the age of twenty-one. He then began the practice of his profession at Augusta, Me., good success from the first attending his efforts. After practising there four years he married Miss Lizzie Homan, who lived but a few months, and following her death he removed to Biddeford, Me.

In 1875 Dr. Hill again married, his wife being Mrs. Myra Mansur, of Corrinna. They came to Biddeford immediately after their marriage, and the doctor opened an office in that city. Two bright boys were born to them, both of whom are living, one at the age of sixteen and the other at twelve.

For six years he followed his profession there, but in 1881, owing to a bronchial trouble and generally poor health, resulting from overwork, he was obliged to seek a change of climate. Accordingly he purchased a ranch in North Dakota, remaining there twelve months, his only companions being a faithful dog and cat. On his return, much improved in health, he changed his residence to Saco, Me. He met with marvelous success from this time on, as a surgeon he having few equals in the country. Twenty-four laparatomies he performed without losing a single case, which record was acknowledged by the American Medical Association to be the very best at *that time in the world.* His greatest fame was won in the removal of a uterine fibroid tumor from a young lady in Dover, N. H., when every other physician had declared the case hopeless. The patient made an excellent recovery, has since married, and at present is in excellent health.

Dr. Hill was prominently identified not only with the American Medical Association, of which he was the first Maine member, but the American Association of Obstetricians and Gynecologists, the Maine Medical Society, and the York County Medical Society. He was possessed of more than usual mechanical genius, and during his career as a student manufactured his own instruments for dissecting. He was also possessed of great artistic talent, never developed save for recreation, but in his father's house hang several fine oil paintings, all of animal life. One fine painting of a horse he sold for a good price.

Dr. Hill was also a keen sportsman and an excellent shot. For a number of years he was a member of the Light Infantry and one of their best marksmen.

After sixteen years of great happiness in his home he at last met with a case that baffled his skill in his own family circle. His beloved wife was the victim of a fibroid growth, the removal of which would entail critical chances, but which was the only hope of saving her life. She desired the operation done by himself. His own hand guided the knife and his loving care brought her into the hope of a complete recovery, but she died suddenly, from complications that arose on the tenth day. Her case was as critical a one as he had ever encountered, but the physicians with him as attendants during the operation marveled at his presence of mind and extreme care for every little detail. After her death the doctor

kept at his labors incessantly, although his relatives urged a long rest, in view of his growing condition of melancholia. Operation followed operation, and a Saco young lady, who had been waiting for months to have him operate upon her, began to make frequent appeals to him to succor her from the certain death she was facing. Although her case was well-nigh hopeless, yet he responded to her appeals, as well as those of her friends; but the case terminated, as he had feared it would, fatally. Following these anxious cases came an attack of grippe that prostrated him greatly, mentally and physically, although he still worked day and night. A brother physician from Biddeford asked his assistance one stormy, cold night, and, while almost too feeble to dress himself, Dr. Hill responded, working faithfully over the case of croup, saving the child's life; but his own life was placed in jeopardy by that night's work.

The long winter and spring of overwork, coupled with grief over the death of his wife, could not be overbalanced by the devotion of his family and brother practitioners, and all medical skill could prompt was not sufficient to build up his wrecked constitution.

Dr. Hill had warm personal friends, though the demands of his practice left him little opportunity for social intercourse. He stood high in the regard and confidence of the members of his profession, and among the physicians of the two cities he was admired without jealousy.

To the poor he was ever their friend, and those in need of his skill and knowledge received it without distinction.

As a member of this Association we mourn his loss, for he was ever a willing worker and did all in his power to promote its welfare.

ALEXANDER DUNLAP, A.M., M.D.

ALEXANDER DUNLAP, M.D.

By WILLIAM H. TAYLOR, M.D.,
CINCINNATI.

Our attention has recently been called to the early history of our country, and with patriotic pride we have noted the wonderful progress made within the century just passed, and, while every phase of life has been marked by advance unparalleled in history, our profession can well claim to have kept pace with other departments of applied sciences. The discovery of anesthetics, the revelations of bacteriology, and the application of antisepsis have enabled us to achieve results in the treatment of disease which but a few decades ago would have been regarded as chimerical. But as we congratulate ourselves on our great success, it is well that we should remember that the status of today is the fruit of the toil and sacrifice of those who have preceded us. Truly may it be said, "Others have sown the seed, and we have garnered the sheaves." Without the pioneer cabin in the past there could have been no noble structure in the present. As there have been explorers and pioneers for our country, so have there been in our profession, and Alexander Dunlap, our venerable *confrère*, was such an one. With courage akin to that of the first to penetrate the unexplored land, he dared to enter the almost unknown field of abdominal surgery. With no observation of other operators, and with but one brief reference in literature,[1] he yielded to the importunities of his patient and made his first ovariotomy. As he said, "I was alone, with none to advise," yet, with the self-reliance characteristic of pioneers, he successfully completed his operation September 17, 1843. This patient survived the operation about three weeks, so that he did not incur the charge of having killed her. A number of years

[1] Cooper's Surgical Dictionary, 1841 (Ovarian Tumor).

intervened before his second and successful operation; these were performed before the advent of anesthetics. All later work was done with the benefit of these.

It is a matter of history that these early operators encountered violent opposition and censure from nearly all surgeons of the day. Reuben D. Mussey, then at the head of the profession in Ohio having failed years before to remove a cyst, dissuaded Dunlap, saying, "He had enough of such butchery." The first knowledge the writer had of ovariotomy or of Dr. Dunlap was while a student (probably in 1857), going to one of the prominent hotels of Cincinnati to see a tumor which Dr. Dunlap was taking home, having removed it at some town on the Ohio River. The tumor was in a washtub, on a wheelbarrow, exposed to public gaze in the rear yard of the hotel. To convey some idea of the size, it was said "the tumor weighed more than the woman after its removal." The doctor reported the removal of one weighing 136 pounds.

During much of Dr. Dunlap's career the facilities for travel were so limited that patients could not be readily transported, consequently the surgeon often had to make long and fatiguing journeys, and then to operate without any selection of favorable environment, preparation of patient, or trained assistants.

Contending against such adverse circumstances, Dr. Dunlap persisted in his work and acquired a reputation over a very wide field. In 1868 he reported having seen nearly four hundred abdominal tumors, yet, influenced by the views then prevalent, he had operated but thirty-eight times; of course, as the rules for operation became more definite and the light of collective observation was shed upon abdominal pathology, he operated much more frequently, in the aggregate making more than four hundred laparatomies.

To compare his results with those of men of equal experience today, who have all the adjuvants of antisepsis, skilled nursing, well-equipped hospitals, and, above all, the lessons of accumulated experience, would be unjust, for it must be borne in mind that there was no result of collective observation to which he could refer, and no well-established differential diagnosis to aid him, but that during his earlier career he had only his own judgment and experience to guide him, yet his results compare favorably with those of men with far greater advantages, but a far higher meed of praise

is his due. Without his work and that of a few contemporaries, the grand achievements of the many men of today might not have been, and as the years go by, and women are restored to life and happiness by the efforts of the ovariotomists, Alexander Dunlap may well deserve the praise for having led the way to such grand results.

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